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Sound Design & Science Fiction

WILLIAM WHITTINGTON

SOUND DESIGN AND SCIENCE FICTION

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By **WILLIAM WHITTINGTON**

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Contents

Acknowledgments viii
Introduction 1

PART I. The Dawn of Sound Design

CHAPTER 1. Sound Design: Origins and Influences 17
CHAPTER 2. Music and Speculation in *2001: A Space Odyssey* 39

PART II. Sound Montage

CHAPTER 3. The Convergence of Hollywood and New Wave Science Fiction 55
CHAPTER 4. Suggestive Fragments in *THX 1138* 75

PART III. Sound Designing

CHAPTER 5. From Sound Capture to Construction: Building the Lexicon of Sound Designs for *Star Wars* 93
CHAPTER 6. Surround Sound and Science Fiction 115

PART IV. Sound Effects

CHAPTER 7. Genre Splicing: Horror and Science Fiction 129
CHAPTER 8. *Alien*: Audio-biomechanics 147

PART V. Voice Design

CHAPTER 9. Blade Runners: A Crisis in Voicing Authority, Identity, and Spectacle 169

PART VI. Final Design

CHAPTER 10. Sound Mixing and Sound Design in Science Fiction Cinema: A Mixed Paradox 191

CHAPTER 11. Mixing Man and Machine in *Terminator 2: Judgment Day* 207

PART VII. Conclusion: A Sounding of the Future

CHAPTER 12. What is *The Matrix*? Sound Design in a Digital World 223

Appendix: Overview of the General Processes of Sound Production 241

Notes 245

Glossary 257

Bibliography 261

Filmography 269

Index 273

For Sabine, MTFBWYA

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Introduction

IN THIS AGE OF VISUAL CULTURE, it is important to remember that "sound is half the picture." Since the 1960s, sound production, technology, and aesthetics have fundamentally changed contemporary Hollywood cinema and the filmgoing experience. In the field of audio technology, for instance, portable sound recorders have encouraged the collection of all types of "raw materials" used to produce innovative sound effects from dinosaur roars to the clash of light sabers; digital audio workstations have allowed for the creation of multilayered montages of dialogue, music, and effects without any loss of quality or buildup of noise; and new exhibition formats from Dolby Stereo to Dolby Digital have expanded the dynamic range of the film sound track and allowed for multichannel (or surround sound) deployment in the majority of motion picture theaters today. More important, though, a new attitude toward sound has arisen. In contrast to the classical period of Hollywood cinema, filmmakers and filmgoers today do not just hear movies in a new way; they *listen* to movies in a new way, and what they are listening *to* is sound design.

Over the past forty years, film sound has not only rivaled the innovative imagery of contemporary Hollywood cinema, which is replete with visual spectacles and special effects, but in some ways sound has surpassed it in status and privilege because of emergence of sound design. The concept of sound design has proven mutable, metaphoric, and, at times, elusive in terms of its analysis, having transformed from an experimental stylistic movement in film form to a unique model of production and critical evaluation. It has also quietly spread beyond the borders of cinema into home theaters and new media. In this book, I trace the rise and transformation of sound design by examining the intersection of cultural,

technological, aesthetic, and genre-related factors that have reshaped not only the contemporary film sound track but also the attitudes and expectations of contemporary filmgoers with regard to sound.

In the process, I unpack four interconnected meanings by which sound design has been characterized and defined. First, sound design refers to the creation of specific sound effects. With new audio technology, sound designers such as Walter Murch (*THX 1138*, *The Conversation*, and *Apocalypse Now*) and Ben Burtt (The *Star Wars* series) were able to collapse for the first time the duties of sound recordist, editor, and mixer to experiment with sound in unprecedented ways. As a result, these sound constructions became multilayered and multifaceted in their ability to convey meaning. These new designs often referenced classical Hollywood cinema in homage and acknowledgement of previous sound codes, but they also included new and innovative aesthetic elements, which showcased the unique metaphoric and psychological potential of sound. As a result, spaceships scream, androids speak in whistles and chirps, and laser blasts ricochet in the chaos of battle.

The second meaning associated with sound design relates to the conceptual design of the overall sound track. Sound designers often work in conjunction with a director or producer to establish an overall plan for an integrated sound track or design. This approach demands the strategic mapping of a film's sound needs as they relate to dialogue, music, and effects. Through this process, which is closely tied to sound editing and mixing, sound motifs are established and developed, and the interpenetration of elements such as music and sound effects is carefully considered in order to avoid duplication or conflict. In *Terminator 2: Judgment Day* (1991), this planning enabled the filmmakers to direct the audiences' attention to specific actions (the firing of a gun, for instance) through the use of sound, while building on thematic motifs related to the battle between man and machine.

The third application of sound design is hardwired to film sound exhibition. In fact, Walter Murch coined the phrase "sound design" to indicate his method of deployment of sound within the theatrical space. In this new era of multichannel sound formats, the film sound track can be channeled into different speakers within the theater environment. These channels typically include left, center, right, left surround, right surround, and subwoofer boom channels. This multidimensional aspect of sound deployment allows for the localized use of effects and music, avoids sound masking or sounds canceling each other out, and fosters a new sense of immersion for filmgoers. Sound design within the theater venue

creates a new kind of space, which fosters new kinds of sound spectacle. More than any other development, multichannel sound shifted reading protocols and altered the expectation of filmgoers for contemporary Hollywood cinema, particularly in relation to the blockbuster. As a result, sound design has also become an industrial imperative and marketing tool for the entertainment industry, influencing not only theatrical film releases but also DVD and video game production.

The fourth and final meaning associated with sound design relates to its function as a model and method for critical analysis. In critical and cultural discourse, sound design is often used as a conceptual model that draws attention to image-sound relations, sound planning and construction, and multichannel deployment, among others. Sound design is evoked in this way in countless reviews, interviews, and marketing campaigns, and even in university classrooms. In this study, I adopt a model of sound design that incorporates the three previous meanings of the term. In short, sound design represents the planning and patterns of the film sound track and the meanings that result from its deployment within the exhibition space. This model activates a method of analysis, which includes a rigorous examination of ideology, production practices, and technology involved in the creation and exhibition of the film sound track. It is important to note that this approach can be applied to any genre or national cinema. My goal is to build a vocabulary that bridges the gap between sound theory and practice that is not solely dependent on the technical and scientific properties of sound. By establishing this model and method of analysis, I hope to establish a means by which to discuss sound in a way that counterbalances the abundance of discourse about visual culture. To quote the famous tagline from the advertisements for THX sound systems, "The audience is listening."

THE PLANNING AND PATTERNS OF THIS STUDY

The aims of this study are threefold. First, I reexamine contemporary film history and technology by privileging sound rather than the image. Specifically, I address events such as the formation of the contemporary Hollywood film sound industry, the rise of sound-conscious filmmakers—a category that includes sound designers—and the introduction of portable recording technology, Dolby Stereo, and the DVD format. Cultural influences from music to the rise of film studies programs at universities are part of the historical context because they facilitated experimentation in film sound and shifts in production practices.

Second, I examine the formal elements of the sound track (dialogue, music, and effects), as well as various processes such as recording, editing, re-recording, and exhibition to expose the constructed nature of contemporary film sound. This detailed approach to the industrial strategies of production and sound style aims to reexamine the notion that film sound is simply a matter of capturing or copying—an idea pervasive in much of the early critical sound theory. Today, we understand that the sound track is one of the most aggressively manipulated areas of film art. There is, however, a tendency to naturalize film sound as continuous and unaltered. Our perceptions are partly to blame. When sounds are separated from their visual referents and inserted into a new context, we are often left wondering, What was that sound? These sonic illusions are what sound designers depend on in the fabrication of cinema sound. Teams of sound recordists, editors, and mixers contribute to the creation of the overall sound track for an individual film—they record, edit, smooth, re-record, and modify sound in innovative and ingenious ways, using everything from the latest computer software to cans of dog food. Sound designer Gary Rydstrom tells the story of using the sound of dog food slipping from an overturned tin can to create the sound effect for the T1000 in *Terminator 2: Judgment Day*.[1] The choices that sound designers make are not simply a matter of industrial requirements. Rather, they are commingled with considerations of storytelling, genre, aesthetic impact, and personal sensibilities. At every step of the construction process, aesthetics is a consideration, and, for this reason, the term "sound designer" has taken hold. As I examine the complexity of film sound, I build a vocabulary of analysis that bridges the gap between theory and practice so that the choices that sound designers make can be understood more fully.

Finally, I am intrigued by how genre, particularly the science fiction genre, has fused with sound design to mediate changes in reading codes and meaning production, while also redefining audience expectations and subjectivity. Science fiction films are the primary objects of analysis for this study because the science fiction genre has historically been the site that has inspired developments in sound technology as well as innovations in sound signification (narratively, thematically, and aesthetically).

Science fiction has become one of the most important genres in media today. As an industrial category, science fiction has been used to classify novels, films, television programs, video games, and countless ancillary products from board games to action figures—and the revenues from

these products have been in the billions. At the same time, science fiction content reaches across diverse populations and creates unique cultural communities in ways that politics and national identity cannot. William Sims Bainbridge broadly describes science fiction as "a popular cultural movement that develops and disseminates potentially influential ideologies."[2] Science fiction, then, provides the vehicle to express and record ideas and changes related to technology, society, history, and even gender. Others argue that science fiction functions as "preparation" for the future, a future that is forever changing.[3] Science fiction offers an artistic and intellectual space to speculate about what could be or what might potentially influence the "real world" of both the present and future. Samuel Delany offers yet another variation: "Science fiction is a tool to help you think."[4] In all its various forms, science fiction is a powerful activator of ideas. Science fiction cinema allows filmmakers and filmgoers to challenge themselves in ways they never expected. The genre can be self-reflexive and self-conscious at times, but it is primarily a means of telling stories.

It is also important to keep in mind that science fiction exists as a point of intersection. It accesses a history of iconography (space craft, computers, robots, and cyborgs, among others), it links itself to a breadth of mythological and thematic concerns (utopia versus dystopia and man versus machine), and it encourages a unique reading pattern that shifts and accommodates multiple points of view. Critically, it can be examined in terms of structuralism, formalism, modernism, postmodernism, feminism, and queer theory. Above all, it is a metagenre that can assimilate anything that it samples. My goal here, though, is not to try to define science fiction. Rather, I am more interested in how sound design activates science fiction (and vice versa) to establish a distinctive mode of subjectivity and understanding. Cinema and sound have changed rapidly in the past four decades, and we have been remiss about reflecting on how it has changed us. I am therefore drawn to how science fiction can assist us in evaluating our contemporary condition. In 1993, Scott Bukatman forwarded the concept of the *Terminal Identity*, a shift in subjectivity established by the infusion of computers, cyberpunk, and science fiction into our lives. Now it is time to examine the sonic equivalent of this identification pattern. Consider this work on sound design and science fiction as a sonic ping that enables a critical navigation of science fiction cinema and offers a sounding of our relationship to it and the modern cinematic experience.

THE CASE STUDIES

To highlight the impact of science fiction on film sound, I closely examine a number of seminal science fiction films, including *2001: A Space Odyssey* (1968), *THX 1138* (1971), *Star Wars* (1977), *Alien* (1979), *Blade Runner* (1982) and *Blade Runner—The Director's Cut* (1992), *Terminator 2: Judgment Day* (1991) and *The Matrix* series (1999–2003). These works are investigated in terms of specific audio elements and processes that produce a unique understanding of planning and patterns of the contemporary film sound track. These science fiction films have activated the creative spirit of numerous sound designers, whose lexicon of sounds has matched and challenged the innovative visuals from Hollywood's best special effects houses. This new generation of sound artists has designed sound effects that highlight themes of difference, alienation, estrangement and change. In addition, they have tinkered with the notions of anthropomorphism as well as machine-man constructs. Ultimately, sound design has revitalized and reshaped the aesthetics of science fiction cinema. The exchanges between science fiction and sound design are complex and open, so the readings of the films that I present are by no means definitive in terms of genre or film sound. One of the strengths of the science fiction genre is that it encourages a multiplicity of readings and reading strategies. Thus, where I concentrate on music, others may rather focus on the sound effects and the music together. My primary goal is to foster the discussion of all forms and uses of sound, a discussion that has been long in coming.

THE CONTEXT FOR THE RISE OF SOUND DESIGN

The films mentioned above and the time period of this study from the late 1960s to the present are seminal to the rise and development of sound design. Following the breakup of the studio system in the 1950s, audio in media experienced a not-so-quiet revolution in terms of aesthetic experimentation and technological development. These factors have had a ripple effect on culture and society. The music industry engaged and inspired a new generation with the introduction of rock 'n' roll and the development of two-channel audio on long-playing records (LPs). As a result, youth culture was hearing music in an entirely new way. The stereo babies had arrived, and some of these audiophiles would go on to become film sound recordists, editors, mixers, and "Movie Brats"—or those "New Hollywood" filmmakers including Francis Ford Coppola, George Lucas, Steven Spielberg, Martin Scorsese, William Friedkin, and

John Carpenter, among others.[5] In the years that followed, they would encourage and in some instances demand that film sound match the quality and technical refinement found in popular music. Film sound embraced the trend of technological advancements by bringing Dolby Noise Reduction out of the labs and into theaters, while film sound recording equipment became less expensive and highly portable (and thus more useful in terms of sound experimentation). With the availability of this new technology, audio artists and filmmakers took greater control over sound construction and design in cinema. This trend has continued today as techno music and digital technology have converged in the production of films such as *The Matrix* and its anime-related collection of shorts, *The Animatrix*.

Concurrently, genre cinema was reimagined by the "Movie Brats" who sought to differentiate themselves and their films from old Hollywood. Genre cinema became the arena for stylistic innovation, big box office receipts and image and sound spectacle, particularly following the release of Stanley Kubrick's *2001: A Space Odyssey* in 1968, which has consistently been cited by New Hollywood filmmakers as one of the most influential films of the period. Science fiction and sound design converged in a symbiotic relationship to push cinematic technologies and techniques to their limits. Genre considerations related to technology fostered an unprecedented interplay between style and content. This happened more recently with the introduction of computer-generated imagery (CGI) and fantasy films such as *The Lord of the Rings* and *Harry Potter* series. The films that are used for the case studies in this book then represent not just eloquent examples of new sound processes and practices, but key contributions in the development of sound design as a stylistic and technological movement.

In a broader sense, the "New Hollywood" cinema embraced genre as a means of creating new types of film experiences that redefined narrative storytelling through spectacle and stylistic play.[6] Filmgoers changed in the process as well—they became increasingly demanding in terms of special effects and stylistic experimentation. They have also become hyperaware of the production process, informed by everything from DVD audio commentaries by directors and production personnel to Internet fan sites. This awareness taps partly into the intellectual pleasure of science fiction cinema, which encourages an analysis of thematic content as well as a mastery over the material means of its manufacture. Contemporary sound tracks have since exploded in their complexity and status, and, in this respect, it is an exciting time to be studying film sound.

THEORIES AND METHODS

In light of the technical and aesthetic complexities of film sound today, it is essential that new models of analysis use a variety of different methodologies to bridge the gaps between theory and practice. Subsequently, I offer a multidiscursive approach to the analysis of sound design, as I incorporate historical, theoretical, technological, and formal analysis. For the most part, traditional sound theory does not respond to the new needs of sound analysis, primarily because it does not envision the complex production capabilities of the modern dubbing stage, or the use of multichannel sound formats, but rather focuses on realism and all too often the "need" for sound. As Amy Lawrence and many others have noted, classical theory has facilitated a pattern of "attack and neglect," which overlooks or "naturalizes" issues of technology and the mode of sound production.[7] Contemporary sound theory has proven far more useful, but there is still a great deal of work to be done. In two influential works, *Yale French Studies, Cinema/Sound,* volume 60 (1980) and *Sound Theory Sound Practice* (1992), sound theorist Rick Altman brings together various essays, which address sound history, sound theory, and music, and he opens up a significant dialogue in film sound discourse.[8] In particular, Mary Anne Doane's article on "The Voice in the Cinema: The Articulation of Body and Space," explores the deployment of sound in its relation to the diegesis (or story world), screen space, and the exhibition environment as it is unified by the conceptual body of the film and the body of the characters within.[9] Her article greatly informed my analysis of surround sound and sound mixing. Altman himself deals with sound deployment but examines sound recording and exhibition not just in terms of "capture" but also as an "event."[10] James Lastra discusses the authenticity of sound recording in "Reading, Writing and Representing Sound."[11] These approaches seek to examine how sound is conceptualized, constructed, and deployed in specific ways, different from the visuals. In addition to these works, Amy Lawrence's *Echo and Narcissus: Women's Voices in Classical Hollywood Cinema* offers an excellent model of sound analysis, incorporating close textual analysis of dialogue and the voice according to a feminist perspective.[12] Her arguments concerning the voice and textual authority particularly informed my analysis of the voice in relation to the two versions of *Blade Runner*.

The history of audio technology and production techniques is also integral to my argument. Recording technology and recording formats have contributed to establishing the mode of sound production and exhibition from the very beginning—and they in turn have influenced how

we experience sound. John Belton's "1950s Magnetic Sound: The Frozen Revolution" historicizes multichannel formats and their construction of "artifice" in terms of sound and image.[13] The magnetic recording and exhibition formats have led contemporary filmmakers to explore the nature of film sound placement within the exhibition environment and have led to the rise of blockbuster spectacles. But no work more fully examines sound technology and its relation to theory and practice than Tomlinson Holman's *Sound for Film and Television*.[14] Of particular importance is the chapter on "psychoacoustics," which provides a scientific explanation for how we perceive (and misperceive) sound. In addition, within the field of production literature, Vincent LoBrutto's *Sound-On-Film*, a collection of interviews with sound personnel, provides an essential history of audio practices related to specific films, technology, and genres.[15] This body of interviews stands in sharp contrast to the past studio publicity on Hollywood sound from Warner Bros. and others, which seemed aimed at mystifying the process of sound production as a means of hiding the "magic." Today, contemporary sound practitioners are much less constrained, as they raise the profile of sound as both an autonomous artistic endeavor and an attraction for filmgoers. Practitioners such as Walter Murch, Ben Burtt, Gary Rydstrom, and Dane Davis (*The Matrix* series) have been eloquent in describing sound theory and practice. Whenever possible, I have followed this ongoing dialogue as these sound designers have lectured and presented their work in Southern California.

Genre studies, specifically related to science fiction, provide the final theoretical framework used for this study. A crucial text has been Vivian Sobchack's *Screening Space: The American Science Fiction Film,* which tracks the genre and its transformations across various time frames, including the blockbuster era. As with Tom Holman's book on sound, *Screening Space* is a necessary resource for all science fiction scholars and filmgoers. I found Sobchack's insights on "affect" through "special effects" particularly useful as I explored film sound as spectacle.[16] Concurrently, I draw on works such as Scott Bukatman's *Terminal Identity* to explore sound and its relation to science fiction subjectivity;[17] Donna Haraway's "A Manifesto for Cyborgs"[18] and Linda Williams' "Film Bodies: Gender, Genre and Excess" for insights into the connection between sound, the body and technology;[19] and Tzvetan Todorov's *The Fantastic* to explore how filmgoers deal with hesitations in belief (emotionally and intellectually), and how this might be applied to sound design.[20] Case studies, in particular, Jerome Agel's *The Making of Kubrick's* 2001, and Paul M. Sammon's *Future Noir: The Making of Blade Runner*, have also

proved essential in establishing understandings of the stylistic designs and construction methods of these films—understandings that I extend to their sound tracks.[21]

From the diversity of this critical work, the adaptability of science fiction studies is evident, which is clearly one of its strengths. For this reason, a single unified plan for science fiction analysis is not my intent; rather, this book offers sonic speculations as they relate to science fiction. In connecting sound and genre, I hope to illustrate that cinema has used its medium and materials as eloquently as science fiction literature has used words and sentences. It is also my hope that this book will be useful both to film scholars and filmmakers alike as they attempt to navigate the complexity of contemporary film sound today, perhaps even foster a new direction in sound and audio criticism that can be applied across media, genres, and national cinemas.

SUMMARY OF CHAPTERS

The structure of the book is loosely chronological, with each section focusing on specific factors of design or technology. Where possible, each section contains both analysis and a case study, except for the sections on the voice and exhibition and the concluding chapter on the future of sound design and *The Matrix* series. The initial chapters of each section contain historical information and theoretical analysis, while compendium chapters offer case studies of specific films or technology. The case studies draw on culturally and technically important films, which at first glance may seem all too familiar. If we move beyond the visuals and familiar narratives, however, an entirely new perspective can be *heard* in terms of their sound design. This collection of films attests to the fluidity and diversity of the science fiction genre, which continually reinvents and revitalizes itself with the introduction of new technologies, new techniques, and new narrative strategies.

Each of the films is employed to examine a particular aspect of film sound, including music, editing, effects, Foley, ambiences (ambient noise), the voice, the mix process, and, finally, exhibition. The goal is to present a comprehensive analysis of an integrated sound design across a body of works. True to the mode of science fiction, I engage in a meta-analysis that cuts across decades of science fiction filmmaking and offers a pointed analysis of the film sound track.

The first section, "The Dawn of Sound Design," focuses on the origins and influences on sound design. In the same way that *2001: A Space*

Odyssey traces the development and evolution of mankind, the first chapter of this book unearths the industrial, cultural, and technological catalysts that triggered this new phase in film sound. In order to establish a discursive context, the chapter begins with an analysis of the evolution of the term "sound design," which was introduced by Walter Murch but has since transformed and expanded its meaning as it has been applied and appropriated in different contexts. The accompanying case study of *2001: A Space Odyssey* addresses the specifics of film music. Music in all its cinematic forms (score, source, and found music) offers unique strategies of construction for sound design in terms of aesthetic approach, production, and overall image-sound relations. As *2001: A Space Odyssey* presents Stanley Kubrick's images of the future (space craft, monoliths, and alien environments), it juxtaposes them with previously recorded classical and avant-garde music. As a result, the image-sound relations of this film became charged with speculative possibilities, not simply about the future of humanity but also the nature of film sound. This film and sound track inspired many contemporary Hollywood filmmakers, in particular George Lucas and Steven Spielberg, to question their attitudes about the application of traditional film music and sound.

The "Sound Montage" section examines the influences of the French New Wave on the formulation of the aesthetic sensibilities of New Hollywood filmmakers. As filmmakers such as Jean-Luc Godard (*Alphaville*), François Truffaut (*Fahrenheit 451*), and Chris Marker (*La Jetée*) experimented with idiosyncratic arrangements of images and sounds within a genre context, the filmmakers working in the New Hollywood took note, appropriating sound tactics, techniques, and themes. Through experiments in film form, New Hollywood filmmakers sought to revitalize and reinvent the "old Hollywood" system with a new approach to filmmaking that was vibrant and appealing to a younger generation of filmgoers. Essential to this process was the science fiction genre, which encouraged experimentation with film form and technology and was particularly adept at displacing social and political critiques of the period. For this reason, George Lucas' first feature film *THX 1138* provides an excellent case study in which to examine the merging of "sound" and "montage." This often-overlooked film presents an insightful critique of the dangers represented by technology, consumerism, and the state, while at the same time the film provides one of the most complex tapestries of sound use in contemporary cinema.

The "Sound Designing" section continues with an exploration of the lexicon of sound effects created by Ben Burtt for *Star Wars*. In these two

chapters, I focus on two of the meanings of sound design, specifically the design of individual effects and, alternatively, the design of sound for the theatrical exhibition space. In chapter 5, I challenge the notion of sound as simple "capture" by unmasking the strategies and techniques of sound design. The science fiction genre in turn raises questions as to image-sound credibility, anthropomorphism, and sound as language. In the accompanying case study, I deal with multichannel presentation, specifically the exhibition format of Dolby Stereo and its relation to reading codes, science fiction, and spectacle.

The "Sound Effects" section expands the reach of sound design with an examination of the elements of ambience, Foley and general sound effects in relation to the genre conventions of horror and science fiction. In the convergence of genres, an exchange of codes, strategies, and considerations occurs, one that realigns the importance and status of the traditionally mundane effects known as Foley and ambiances, charging them with a heightened sense of dread and anxiety about the future. In the accompanying case study, I deconstruct Ridley Scott's horror–science fiction hybrid *Alien*, specifically addressing the stylistic approach of the film (the merging of the organic and technological) and its interpenetration into the "realistic" effects of the sound design. In this new horror-science fiction context, reading protocols and audience expectations are revised, and ultimately the reach of sound design is expanded and transformed.

The "Voice Design" chapter continues with a meta-analysis of sound design by offering a close textual analysis of another Ridley Scott film, *Blade Runner*, released in 1982, and *Blade Runner—The Director's Cut*, released a decade later. Although the differences between the two versions have been debated in terms of the narrative, no study has specifically taken up the difference in terms of the sound tracks. These are two distinctly different films, because of various picture edits and a revision of the sound design. Through an extended comparison and contrast between the two versions of *Blade Runner*, the original 1982 theatrical release (with the voice-over) and the subsequent 1992 *Director's Cut* (without the voice-over), I address the issue of the voice and examine its connection to narrative authority, subjectivity and cinematic spectacle. Throughout this analysis, I investigate the highly constructed nature of the voice in cinema and expose its influential yet tenuous position in both this science fiction film and the model of sound design.

The subsequent section, "Final Design," offers a comprehensive analysis of the model of sound design as it relates to the processes of re-recording. In addressing the composite nature of the sound track, I deconstruct the

"work" of the overall sound design in relation to sound mixing to unmask the forces that stabilize and balance the various formal elements and narrative intents. Countering this balance, however, are equally powerful forces that threaten to rupture and expose this work. It is within this tension that the paradox of the film sound mix emerges, and the usefulness of genre as mediator is explored. Chapter 11 offers a case study of *Terminator 2: Judgment Day*, which is considered by many to be one of the best-mixed films in contemporary Hollywood cinema. In this chapter, I draw together many of the issues of sound design previously explored from sound effects creation to issues of the voice, and I link them to the mutable and metaphoric genre of science fiction. This case study provides not only a unified analysis of the film's overall sound design but also a model and method of analysis that can be applied to any film or genre.

The concluding chapter, "A Sounding of the Future," specifically addresses how sound design has been deployed beyond the borders of the motion picture theater in the home, on DVD, and in computer games. Sound design and sound literacy have gained their greatest boost from the technology of home theaters in conjunction with new consumer release formats like DVD, which have the ability to present a variety of audio commentaries and documentaries. One of the most important Hollywood franchises to change how we listen to films (and games) in the home has been *The Matrix* series. The first *Matrix* film became *the* DVD that all home theater owners had to have. Through a host of documentaries and supplemental material, audiences quickly learned to master the matrix—its narrative content, means of construction and sound design. *The Matrix* narrative does not end with the films. Rather, it extends into the games, *Enter the Matrix, The Matrix Online,* and *The Matrix: Path of Neo*. In the context of games, sound design is once again being repurposed, reshaped, and redefined. It is fitting then that a film about choice—*The Matrix*—gives science fiction fans their greatest agency in terms of sound, technology, and subjectivity.

Welcome to sound design and science fiction.

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Part I

The Dawn of Sound Design

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1

Sound Design

ORIGINS AND INFLUENCES

WHEN A STRANGE MONOLITH first appears on the plains of Africa in Stanley Kubrick's *2001: A Space Odyssey*, the "Dawn of Man" begins. Cocreator Arthur C. Clarke describes the moment in this way:

> After having touched the monolith, a barely conscious reaction occurs in the leader's mind. As he looks out now upon the hostile world, there is already something in his gaze beyond the capacity of any ape. In those dark, deep-set eyes is a dawning of awareness—the first intimations of an intelligence, which would not fulfill itself for another four million years.[1]

It is important to note that Kubrick renders this sequence in highly innovative and unexpected cinematic terms. As the ape picks up a bone and begins to understand its potential as a weapon, a three-note musical progression from *Also Sprach Zarathustra* by Richard Strauss plays on the sound track and punctuates the point of realization. A moment later, when the bone is tossed skyward, a match cut transforms it into a space platform carrying nuclear weapons, pointing down at a still "hostile world" millions of years later. This sequence is a seminal moment in film history as well as for this study, because it reveals the potential of image and sound design to both describe and transform subjectivity.

Historically, within the genre, this sequence cast off the tropes of science fiction films of the 1950s, which were filled with atom monsters and teen angst, and replaced them with new and challenging narrative dynamics and audiovisual tactics that redefined the status of the genre and demanded a new kind of attention from audiences. When it was released

in 1968, *2001: A Space Odyssey* exemplified what film historian Paul Monaco called the "cinema of sensation," which emphasized self-conscious aesthetic experimentation in the fields of editing, cinematography, and sound and the integration of new technologies and narrative components, to evoke visceral (and contemplative) responses from filmgoers.[2] In addition, shifts in subjectivity became part of the formal play of the films of this period, and, not surprisingly, filmgoers, who tended to be part of the youth culture, shifted their expectations and awareness of film form as a result. Significantly, it is within this context that the "dawn of sound design" begins.

To provide a context for the overall analysis of sound design and science fiction, this chapter traces the shifts in attitude about film sound in the 1960s and early 1970s, identifying the origins of sound design and exploring the influences of historical, cultural, and technological factors that gave rise to this new aesthetic approach to cinema sound. Of particular importance is the fragmentation of the Hollywood studio system, which destabilized the traditional mode of sound production and exhibition and, subsequently, influenced the quality of film sound in local theaters. Fortunately, this downturn was countered by the rise of a new generation of contemporary filmmakers who embraced audio recording and reproduction innovations such as the Swiss-made Nagra recorder and multichannel exhibition formats, which in turn altered attitudes related to sound construction and reception. These filmmakers were equally eager to experiment with sound aesthetics, montage, and design, particularly within genre contexts, leading to the production of such sound-conscious films as *Bonnie and Clyde* (1968), *THX 1138* (1971), *The Conversation* (1974), *Nashville* (1975), and *Apocalypse Now* (1979), among others. I argue that this new attentiveness to film sound drew directly from cultural influences related to music (rock 'n' roll), film (international art cinema), and academia (the rise of film studies programs). In this context, sound and image relations would be tested, shattered, and transformed, but it is important not to forget the impact of science fiction as well. For this reason, Chapter 2 presents an extended case study of the function and application of "found" music in the groundbreaking science fiction film *2001: A Space Odyssey*. Importantly, the image and sound experiments in this film provided a template for future blockbuster spectacles, showcasing photorealistic special effects and thematically driven uses of sound and music. As Vivian Sobchack notes: "As in all his SF films, Kubrick uses music structurally as well as narratively to illuminate his central themes."[3] In many ways, *2001:*

A Space Odyssey and its sound track served as an overture to the aesthetic movement of "sound design" well before the term entered the cinematic lexicon. Most importantly, the music and image dynamics in the film set the stage for a re-examination of all of the elements of the film sound track (dialogue, music and effects) by a new generation of filmmakers, who were deeply invested in both film sound and science fiction.

ORIGINS AND APPLICATIONS OF SOUND DESIGN

The early origins of sound design in Hollywood cinema can be traced to another sound construction—"sound montage," which was the production

14
The Future is here.
THX 1138
Warner Bros. presents THX 1138 · An American Zoetrope Production · Starring Robert Duvall and Donald Pleasence · with Don Pedro Colley, Maggie McOmie and Ian Wolfe · Technicolor® · Techniscope® · Executive Producer, Francis Ford Coppola · Screenplay by George Lucas and Walter Murch · Story by George Lucas Produced by Lawrence Sturhahn · Directed by George Lucas · Music by Lalo Schifrin

FIGURE 1.1. *THX 1138* (1971) Copyright © 1970 Warner Bros. Inc.

credit that Walter Murch took on George Lucas' first science fiction feature *THX 1138* (1971). Using contrapuntal editing and extensive re-recording techniques, Murch experimented with sound perspective, tape-speed modulations, audio filters, and image-sound metaphors throughout the film. He created unique montages of sound, which included dialogue exchanges between robot police officers and controllers, the whine of jet car chases, and ambient cacophonies of overpopulated cityscapes. His approach to sound revealed a constant tension between musicality and functionality within the genre of science fiction and underscored a shift in sound style related in part to international art cinema that will be explored in greater detail in chapters 3 and 4 of this study. Nonetheless, the techniques and overall aesthetic approaches he developed for *THX 1138* would extend into his subsequent film work from *American Graffiti* (1973) to *The English Patient* (1996). Perhaps his most notable and self-reflexive use of "sound montage," however, occurred in the 1974 film *The Conversation*, directed by Francis Ford Coppola. The story calls attention to sound recording as it unravels the life of professional eavesdropper Harry Caul (Gene Hackman) and his link to a corporate killing. As with *2001: A Space Odyssey*, the film combined international art cinema techniques, not just on the visual track with its blue hues and chilling compositions but also on the sound track.

The constant reevaluation of a single recording of a conversation between two characters ("Ann," played by Cindy Williams, and "Mark," played by Frederic Forrest) in a park exposes the unstable, subjective, and constructed nature of recorded sound. The most important revelation of the film hinges on a single word: "He'd kill *us* if he got the chance." The emphasis on "us" implicates the couple as coconspirators in the murder of an industrialist. Previously, a misinterpretation of this emphasis led Caul to believe that this couple would be the victims in a murder plot by the industrialist. The film challenges the notion that technology and the processes of sound recording are just a matter of capture, not construction. Surveillance recordings are assumed to be technologically neutral in many respects. They capture the "reality" of the event, presenting "fact." This, however, is not necessarily the case for Caul, who realizes that there is a difference between "fact" and "truth" in audio recording. These assumptions are highly dependent on the context in which the recordings are produced and the reasons behind their manufacture. In short, it is important to ask, Who is listening? And why? During the course of the film, Caul tries to remain neutral. He doesn't care about the context or politics of his job. He just wants "a big fat recording." For him, recording is simply an issue of craft and skill.

FIGURE 1.2. *The Conversation* (1974) Copyright © 1974 Paramount Pictures Corporation. "He'd kill us if he got the chance." The sound track hinges on the misperception of a single word.

As with sound design, though, there is always more to the story. Sound recordings are filled with layers of meaning. Caul is confronted with an existential and ethical crisis over the meaning and implications of his work. He has made a recording that he does not understand, but he knows it will lead to a murder. Although his recordings may be technologically perfect, how he hears the recordings is a matter of perception or, in this case, misperception. Through the sound montages in films like *The Conversation* and *Apocalypse Now*, Murch and a new generation of filmmakers repositioned the status of film sound within the production process, moving it beyond issues of craft. Film sound became sonic artistry, which could foster a pattern of cinematic play, self-reflexivity, and shifts in subjectivity.

The actual term "sound design" was introduced by Murch as well to describe his innovative sound work on Francis Ford Coppola's 1979 film about the Vietnam War, *Apocalypse Now*. The film is based on Joseph Conrad's *The Heart of Darkness* and follows the story of an army captain (played by Martin Sheen) as he ventures into the Cambodian

FIGURE 1.3. *The Conversation* (1974) Copyright © 1974 Paramount Pictures Corporation. "Who is listening?" Professional eavesdropper Harry Caul (Gene Hackman) discovers that sound recording is not simply a matter of objective capture.

jungles on a mission to assassinate a much-decorated colonel (played by Marlon Brando) who has set himself up as a man-god in a remote village. Throughout the film, Murch "hung" sounds in the motion picture theater much like a production designer would hang fabric on the set. Working as both sound editor and mixer, Murch constructed dense layers of dialogue, music and sound effect for the 70mm widescreen audio format to create a sense of immersion for filmgoers. In specific "Road Show" venues, the multichannel theater array consisted of six channels of sound, specifically left, center, right, left surround, right surround, and a low-frequency subwoofer channel, which were managed by a Dolby decoder and a surround sound adapter.[4] The configuration was a precursor to many of the digital formats found in theaters today. This early multichannel format gave Murch the means to deploy the film's sound effects with an attention to frequency, sound separation, and placement within the spatial quadrants of the theater.[5] According to Murch,

> I had a detailed mapping out of the sound effects and the music on paper—where each of them would be in mono, where each of them would be in simple stereo, where each of them would use full quadraphonic sound . . . that's actually where the concept of sound design came from.[6]

During the "Ride of the Valkyries" (Wagner) helicopter attack on the Vietnamese village, hundreds of sound components from the whipping of helicopter rotor blades to the explosions of munitions filled the theater environment.[7] The intent was to construct a visceral spectacle with image and sound that mimicked combat anxieties and confusion, as it offered shifting subjective points of view.

To translate this conceptual approach in practice, Murch broke down the various sounds as if they were music to be played by different sections of an orchestra positioned in different areas of the motion picture theater:

> We would think of each one of those groupings [sounds of AK-47s, M-16s, Mortars, etc.] in the way a conductor would think of the various groupings in an orchestra—from the most dominant to the least. A conductor might ask himself, "Where is most of the sound coming from, and what group of instruments is carrying the main melodic line?"[8]

In this particular sequence, the sound design placed filmgoers in the lead helicopter, immersing them in the frenzy of radio cross-chatter and artillery fire. In addition, the music moved swiftly from synchronized source music (from the speakers mounted on the helicopters) to full, nondiegetic score (or, rather, music from outside the narrative space). As a result, the music blocking in conjunction with the images of the attack created a cinematic spectacle that changed the cultural and historical associations related to the Wagner piece, much in the same way that the associations of *The Blue Danube* were altered by their application in Stanley Kubrick's *2001: A Space Odyssey*. In *Apocalypse Now*, the unexpected juxtaposition presented a spectacle of the insanity of war while also offering a sharp commentary on colonialism.

In light of the impact of this sequence on filmgoers and filmmakers alike, the term sound design swiftly entered the mainstream discourse dealing with cinema and sound, but as we shall see, even Murch, who coined the term, could not contain its meaning—on or off the screen.

FIGURE 1.4. *Apocalypse Now* (1979) Copyright © 1979 Omni Zoetrope. Walter Murch conceived of the term "sound design" in relation to the multichannel exhibition of the sound for *Apocalypse Now*.

Following the release of *Apocalypse Now*, the term "sound design" has become somewhat controversial in Hollywood production circles, as sound recordists and editors appropriated the term or were labeled "sound designers" by the popular press. It was as if the Hollywood "star system" had finally discovered the sound world. Traditional sound personnel, however, viewed the term as a grab for credit in the collaborative medium of filmmaking. Others preferred that production designations remain connected only by the hierarchy of sound processes (sound recordist, sound editor, or sound mixer), but the landscape of sound production had changed. Sound artists and innovators were emerging. Most notably, Ben Burtt acquired the title "sound designer" for his work on *Star Wars: A New Hope* (1977), *Star Wars: The Empire Strikes Back* (1980), and *Star Wars: Return of the Jedi* (1983). The original trilogy featured the unusual sounds of laser blasts, space battles, and a host of alien languages and android noises. Many of these sounds have since become some of the most recognizable effects in popular culture, particularly the data chatter and whistles of R2-D2 and the shimmering oscillations of the Jedi light saber. These sounds rapidly formed the lexicon of sound designs used in a host of Lucasfilm ancillary products from audiobooks to computer games, reaching far beyond the borders of cinema. Burtt's groundbreaking sound constructions for the *Star Wars* series and the *Indiana Jones*

series have even won him two Special Achievement Awards in Sound from the Academy of Motion Pictures Arts and Sciences and firmly solidified his position as a sound artist and designer.

Burtt's aesthetic approach and his notoriety as a sound designer expanded the meaning of the term "sound design," making it more specific to the creation of sound effects. For example, during the cantina sequence of *Star Wars*, the various images of the drunken space jockeys are juxtaposed with growls, barks, and screeches combined from all types of animals from dogs to bears. These effects were processed, layered, remixed, and edited to establish the rough atmosphere of this busy space dive. For filmgoers, these types of unique sound creations would foster new expectations for contemporary genre films, particularly science fiction films. Burtt had created a new set of standards. Specific sounds became like animated characters, alive with their own personalities, stories, applications, and functions. As with the new visual effects, filmgoers now expected high levels of innovation, aesthetic experimentation, and integration in all formal areas of filmmaking, especially sound. As a term, sound design had by now expanded its meaning to include the overall concept and spatial use of sound as well as the creation of specific sound effects.

With the success of the blockbuster phenomenon and with more attention focused on sound and the "sound designer," Hollywood unions grew concerned about the blurring of traditional boundaries for sound personnel and what this might mean to job classifications. Jurisdictional tensions were inevitable as the use of the term "sound designer" seemed to privilege the contributions of one individual sound specialist over the entire sound team.[9] Aptly, Bill Varney, a longtime re-recording supervisor at Samuel Goldwyn Studios and later at Universal, has questioned the position designation and the broader conception of sound design with skepticism:

> I don't think that any one individual designs a sound track. It would be nice to think that someone sits down and has a very concise idea, from the beginning of reel one to the very end of the movie. But all these things get compromised.[10]

Varney does acknowledge the importance of "sound creators," but only in their ability to serve the images or environments established within a film.[11] As a re-recording supervisor, Varney has a considerable stake in maintaining his role as the overall coordinator of the sound mix for a film,

but he does not view himself as a sound designer, though, like Murch, he has a considerable hand in where sounds are positioned within the theater space.

The resistance to the designation reveals a tension within the field of sound production over whether film sound should be viewed as a technical craft or artistry. "Good sound" has traditionally meant clarity and fidelity in capture and reproduction, particularly in the areas of music and the voice. Conversely, innovations in conceptual design and construction of sound are now a key focus of the contemporary film sound track. In part, the new blockbuster narratives demand it—they are replete with special effects, images of excess, and spectacle, so drawing from a library of standard sound effects is no longer an option. For a sound designer, traditional standards of excellence related to capture and fidelity are still important, but they are only tools and techniques for creating an integrated tapestry of sound designs, which are attentive to larger considerations such as spatial placement, genre, metaphor, and thematic motifs.

Currently, the Academy of Motion Picture Arts and Sciences does not recognize the category "sound designer" for its overall awards process, nor do the Hollywood sound or editorial unions list the position among their rosters of job designations. Jurisdictional battles over duties, responsibility, and, most important, screen credit have prevented the adoption of the term into these formal circles. In the past decade, though, Gary Rydstrom (*Toy Story*, *Jurassic Park*, and *Terminator 2: Judgment Day*) and others have taken "sound design" as a credit on screen but have made sure also to take credit for their actual technical designations, such as mixer or sound editor. By taking multiple credits, a sound designer is assured a place at the podium during the Academy Awards ceremonies. The other alternative is waiting to be honored with a special achievement award in the area of sound.

Nonetheless, the shift in the application of sound design expanded its meaning to include the specific design of sound effects as well as the overall design of the film sound track, which includes the placement of sound within the theater space, as Murch had originally conceived. The term has even integrated itself institutionally into many university film programs, where it has become a method for studying and teaching film sound production. At the University of Southern California, Professor Tomlinson Holman, who is also the inventor of THX Sound, describes sound design as "[g]etting the right sound in the right place at the right time with the equipment available."[12] Included in this definition is the

ever-expanding range of historical, technical, and theoretical issues of contemporary film sound. The "right sound" is encoded with factors such as the history of sound effects, canons of taste, narrative requirements, and sound perspective. The "right place" and "right time" refer to the codes and conventions of sound-image editing, as well as the pragmatics of mixing and presentation. The "equipment available" places the practice within economic and technical parameters.

As is evident, what constitutes sound design is far from fixed. It continues to grow as new influences are introduced and it is applied in different contexts from production to academia (and most recently in relation to video games and new media). For this study, however, the overall model and method of analysis will proceed from a conception of sound design as the planning and patterns of the film sound track (which infers analysis of ideology, production practices, and technology) and the meanings that result from its deployment within the exhibition space. Embedded in this model is a complex weave of film history, production methods, and technological innovations in sound recording and reproduction, as well as various cultural influences. To unravel the foundations of sound design, then, it first becomes necessary to reexamine familiar histories, technologies, and cultural movements with an emphasis on the sonic rather than the visual. The remainder of this section examines the context and foundation of the sound design movement by looking back at the breakup of the studio system in the late 1940s and looking forward to *2001: A Space Odyssey*, when the dawn of a new era in film sound raised a new set of questions that cinema is still trying to answer.

SOUNDING OFF ABOUT THE BREAKUP OF THE HOLLYWOOD STUDIO SYSTEM

Although the story of divestiture by the major Hollywood studios is by now well known, what is far less familiar is its impact on film sound, especially in relation to sound exhibition and the implementation of audio technology, as well as sound production practices. In May 1948, the U.S. Supreme Court handed down its decision in the antitrust lawsuit *United States v. Paramount, Inc., et al.,* also known as the "Paramount Case."[13] The resolution of the case effectively ended the vertical integration of major film studios in Hollywood, the dominant production and distribution system within the industry. The Court deemed that this system constituted a monopoly and was in violation of antitrust laws. The studios were required to divest their theater chains and discontinue the practices of

blind selling and block booking. The "Paramount Case" and a series of consent decrees (initiated by the studios to avoid further litigation) would prove one of the key catalysts in the decline of the Hollywood studio system, as theaters were divested over the next decade. Divestiture had serious consequences for film sound. In terms of film presentation, the quality of sound reproduction declined radically. When the studios owned the theaters, technical advances could be implemented during the production process with assurances that the theater environment would be able to handle the advance. It can be argued that speaker technology and noise reduction may have advanced much faster if the studios had not been required to divest. Studios such as 20th Century-Fox did attempt to exert some control over sound reproduction by releasing films only in specific formats, which would require retrofitting theaters with new sound technology. Theater chains, however, vigorously resisted the implementation of the technology, petitioning studios to release their widescreen films in traditional optical formats as well as the newer multichannel magnetic formats. A memo from the chairman of the Allied States Association of Motion Picture exhibitors to Warner Bros. Studio clarifies the dilemma:

> I do not need to tell you that unless prints of CinemaScope pictures containing one-track sound are made available to thousands of theaters that simply cannot afford the full stereophonic equipment, their situation will be tragic. As you know, there is a violent difference of opinion in the industry as to whether the stereophonic sound adds anything to the enjoyment of the picture. Certainly, there is no need for it in medium and small theaters.[14]

The theater chains prevailed in this instance and throughout the decade in limiting the implementation of new sound technology to "Road Show" engagements and spectacle films.

The implementation of multichannel formats, however, did receive a significant boost with the development of Dolby Stereo, a four-channel system of sound decoding. In fact, *Star Wars* was one of the first widely released films to integrate this new technology into its exhibition strategy. The successful integration of this format into domestic theater was in part due to its ability to function with existing presentation technology. A Dolby Stereo film print could be played in Dolby with new equipment upgrades or it could be played on a theater's existing mono playback system. The decisions about upgrading sound technology then remained

in the hands of the theater owners. If they felt the potential to upgrade was justified in terms of attendance, they could change out the sound projector and decoding technology. Only recently have independent sound houses like Skywalker Ranch (a division of Lucasfilm) and the major studios attempted to reassert some measure of standards and practices in relation to film sound reproduction by experimenting with THX Sound Systems and the implementation of the Theater Alignment Program (TAP). In the push toward better theatrical sound presentation, sound reproduction—fidelity, noise levels, and dynamic range—as well as separation and localization are optimized by these technologies and standards, and, as a result, sound quality has become a significant factor in the economics of theater patronage. According to Lucasfilm, THX theaters report "up to 25%" higher revenues than non-THX theaters.[15] The audience is in fact "listening" and demanding better sound reproduction from local theaters. This demand was in part facilitated by theaters beginning to advertise their sound systems and sound formats through trailers and poster art beginning in the mid 1980s.

The breakup of the studio system affected sound production and sound personnel as well. In the 1960s, corporate conglomerates began acquiring film studios, further fragmenting the studio system and facilitating the dominance of the independent production and the "producer unit" and "package unit" system, best exemplified by Alfred Hitchcock's *North by Northwest* (1959).[16] In 1966, for instance, Gulf and Western acquired Paramount Studios; Kinney National Services bought Warner Bros. in 1969; while TransAmerica purchased United Artists in 1967 and MCA bought Universal.[17] A strategy of diversification led to corporate expansions into music recording, theme parks, and publishing. The idea was that synergies could be established so that literary or artistic properties could be developed in one area of the company and then passed along to another for repurposing. The film industry, however, still suffered unprecedented economic losses. Conditions such as increased film production costs, changing audience and social demographics, and the rising importance of television (among other leisure activities) as an alternative to cinema led to a significant downturn in the financial profile of the Hollywood film industry. Film historian Thomas Schatz notes, "Studio profits fell from an average of $64 million in the five-year span from 1964 to 1968, to $13 million from 1969 to 1973."[18] Primarily, conglomeration for the film studios meant a reconfiguration of financial structures and downsizing of facilities. In *American Film and Society since 1945*, Albert Austen and Leonard Quart argue,

> The studios had become primarily financiers and distributors, treating film more as a business than an industry and consequently taking more interest in profit margins than in the substance of their product.[19]

As a result, films were no longer produced entirely within the confines of the major studio facilities, and the impact on film sound production was immediately apparent. Sound departments were dismantled or spun off as separate corporate entities. Production shifted to the independent production companies, and house styles at the studios—which had developed because of the shared assets of film libraries and sound personnel—dissipated.

The fragmentation and elimination of studio sound departments led to the rise of independent sound houses, such as Todd AO, the Goldwyn Studios, American Zoetrope, and, later, Skywalker Sound. Many houses purchased equipment and facilities from studios that were downsizing and simultaneously integrated new music and computer technologies, which proved smaller and more versatile than previous studio equipment. Sound production and postproduction became a separate (and highly competitive) industry. In this new marketplace, various sound facilities would compete for independent production contracts, customizing to the technological and aesthetic needs of each new production. They would also have to deal with idiosyncrasies (and deficiencies) of filmmakers and producers, whose interest and knowledge of sound varied greatly. At times, the production of sound tracks suffered under budgetary constraints. Even today, producers often spend too much time and capital on production and do not save adequate funds for the needs of postproduction sound. Innovation and technology were advanced only as influential producers and directors grew more attentive to sound and music in terms of their aesthetic and economic impact. The "Movie Brats," a group of contemporary filmmakers that included George Lucas, Martin Scorsese, Brian DePalma, and Steven Spielberg, were all interested in audio, as were other filmmakers such as William Friedkin and Robert Altman. Dolby Noise Reduction, multitracking, and denser sound tracks prevailed during this period on films such as *The Exorcist* (1973), *Nashville* (1975), and *Star Wars* (1977). The films and filmgoers of this period demanded a new sound to match the visual innovation and aesthetic reach of the blockbuster film, particularly the science fiction blockbuster. The era saw the release of many seminal science fiction films including *Close Encounters of the Third Kind* (1977), *Alien* (1979), *The Thing* (1982)

and the *Star Wars* sequels. These films drove the sound design movement. Science fiction films, more than any other genre, recalibrated audience expectations for spectacle, in terms of not only special effects but also sound design. Sound became part of the cinematic event, a selling point and a part of the spectacle, immersing filmgoers in spacecraft traveling at light speed or jolting them with the explosions as planets disintegrated. As new techniques and technologies were created and implemented, these innovations could not be discarded. Rather, filmmakers, studios, and exhibitors were expected to build upon these changes. This pattern continues today, as digital theaters slowly displace traditional film-only venues. Not surprisingly, the *Star Wars* prequels have led this charge, offering theaters the option to project a digital "print" with digital sound.

PORTABLE TECHNOLOGY AND A NEW MODE OF SOUND PRODUCTION

Following the breakup of the Hollywood studio system, many sound personnel retired, while others became freelance agents, moving from film to film without permanent contracts or positions. Freelance employment has become the norm today for picture and sound editors alike. Some experienced sound editors and mixers went to work for the various sound houses or attached themselves to specific directors or production units. For sound recordists, their employment path was similar. They were, however, assisted in the transition by the introduction of portable recording equipment, which proved one of the key technological factors in the rise of sound design. Of particular importance was the Swiss made Nagra III, a portable ¼" magnetic tape recorder, designed by Stefan Kudelski and introduced in 1957.[20] The Nagra eliminated the need for large studio sound trucks that formerly held all of the equipment necessary for sound capture. This initial model was subsequently upgraded with silicon transistors in 1969 and released as the Nagra IV. It featured a variety of meters, speed varier, a self-speed check, and redundancy systems to assure recording quality and reliability and became a staple of independent filmmakers working in the new documentary style of cinema verité. Portability and economy were key factors in the adoption of this recorder by Hollywood's independent sound personnel. At less than $10,000, the unit was inexpensive and was extremely reliable, limiting maintenance costs. Subsequently, a sound recordist could be contracted for both sound expertise *and* recording equipment. Portability and mobility were essential to developing a new lexicon of film sound, allowing a recordist to roam freely, hunting and gathering all types of effects. According to

Burtt, the portable technology, along with smaller mixing boards and processors, allowed the creative potential of film sound to be "rediscovered" and reinvented in this new era.[21]

With the Nagra and multitrack recorders, experimentation by sound personnel became possible and was in fact encouraged by producers and directors like George Lucas and Francis Ford Coppola. For *Star Wars*, Burtt traveled extensively throughout the Los Angeles area, recording highway noises through corrugated tubing as well as jets and heavy machinery for the futuristic vehicles in the film, all on the portable Nagra. Like the new generation of directors, Burtt understood that sound could do more than capture a cinematic reality. It could create one. Without access to traditional studio sound departments and sound libraries, producers and directors often had no choice but to commission sound designers to create new catalogues of sound for their films. According to Murch, this was the case for *THX 1138*. The various sounds of jet cars, robots, and computer circuitry were created from sets of newly recorded components and manipulated through editing and multitrack recording.

It is important to note that Coppola and Lucas both moved their productions to the San Francisco area, thus avoiding Hollywood's unions and the strict divisions of labor. Sound personnel in San Francisco come under the Stagehands Union, which allows greater latitude in jurisdictional matters and duties regarding sound mixing and recording. In this context, Burtt could conflate the duties of recordist and mixer to compose infinite variations of new sounds, customized to the needs of a particular narrative and not waiting until the final mix to make critical creative decisions. In part, this shift in mode of sound production springs from an influential cultural factor—the rise of the film school.

Gary Kurtz, producer of *Star Wars* and *American Graffiti*, notes, "What film schools spawned were film schools. That, more than anything else."[22] Although the comment is facetious, a deeper truth lies in the fact that the increase of film courses throughout the country would cause an explosion of cinematic analysis. Major universities such as the University of California Los Angeles, the University of Southern California, and New York University offered courses in film aesthetics and production, while other universities included cinema in already-established disciplines such as English literature, communications, or language studies. Cinema studies promoted the analysis and exploration of film aesthetics, history, economics, and production and, in turn, heightened not only cinematic literacy but also sound literacy. Film societies would screen a balance of classic Hollywood films and international art cinema, all of which

influenced the film school generation. In this context, Orson Welles' *Citizen Kane* (1941) might be celebrated for its orations and intricate sound editing, while on the same program Jean Luc Godard's *Alphaville* (1965) could be admired for its idiosyncratic sound recording techniques.

In terms of student film production, university film programs offered young filmmakers an alternative mode of production to the traditional Hollywood system. According to Walter Murch, a graduate of USC,

> Someone who's been to film school has a kind of inverted pyramid of experience. . . . Because of the curriculum, you are forced to do everything, and only gradually do you focus on one thing, whereas in the industry, it's the exact opposite. If you enter as an assistant sound man, you become a sound man, and then, perhaps, a sound editor.[23]

The limited scope of film projects would necessitate a mode of production in which individuals would work on their own or in small groups, where multiple positions of responsibility would be shared and acknowledged in terms of credits. Very often student directors were required to record and edit their own sound, which is still the case at USC today. As with any group of artisans, students come together to shape and handcraft a project in a unique and often idiosyncratic way. As a result, future New Hollywood filmmakers became conversant with all facets of cinematic technology and design. In *The Movie Brats*, Michael Pye and Lynda Myles argue,

> In place of the narrow experience the old studios offered, the new filmmakers had been given a thorough grounding in the basics of their craft. It is no coincidence that sound should be so crucial to films like *The Godfather* or *Star Wars*, or that editing of *Taxi Driver* or *New York, New York* should be so idiosyncratic. Coppola, Lucas, and Scorsese all know the basic technology and grammar of film well enough to take it for granted and transcend it.[24]

The mode of production in cinema schools provided enough crossover within the disciplines to allow new filmmakers the opportunity to experiment with image and sound constructions with confidence on their Hollywood financed feature films. George Lucas' student film *Electronic Labyrinth THX 1138:4EB* and its translation into the feature film *THX 1138* provides one of the best examples of this exchange.

AUDIO CULTURE: HI-FI, YOUTH CULTURE, AND ROCK 'N' ROLL

Concurrent with the cinematic developments that were informing the model of sound design, the broadcast industries and the consumer electronics industry created a generation of audiophiles after World War II by offering expanded music programming and high-quality, low-cost audio components to American consumers, specifically the youth market. From this generation of listeners would emerge filmmakers who were conversant in both sound technology and aesthetics, and they would apply their knowledge of audio culture to transform contemporary film sound tracks. Music in particular became not just sonic wallpaper but rather a part of the mode of storytelling.

The broadcast and electronic industries set the context for this shift in the status of sound and music in media. In 1948, CBS introduced the long-playing record (LP), developed by Peter C. Goldmark and featuring "microgroove recording," which allowed more than twenty minutes of program material per side, per twelve-inch disc.[25] The vinyl recording base and finer grooves offered a significant advance in recording in terms of fidelity and sound quality, but the LP record was only part of the story. LPs held a vast archive of music, but the introduction of new radio components fueled the consumer electronics revolution. The invention of the transistor reduced the need for vacuum tubes in radios, thereby reducing the size and bulk of the technology. The Nagra and new film-mixing consoles greatly benefited from the technology as well. The term "Hi-Fi," which had previously been used in England before World War II to signify custom radio designs, had been adopted by mass-market consumer electronics firms such as Fisher and H.H. Scott.[26] According to Christopher Sterling and John Kittross,

> Many hi-fi sets—actually collections of matched components—were designed to take advantage of the growing number of FM stations, many of which programmed classical music, the flood of LP records, and the promise of home tape recording.[27]

Sound technology had finally moved from the professional realm to the consumer realm, allowing audiophiles to embrace the technology to form bands, record music, and spin records at clubs. A similar pattern is occurring today with new digital technology and software such as *GarageBand* and *Soundtrack*. On a single desktop, a consumer can edit a film, mix sound effects, and create a music score—then burn the entire production to CD or DVD for exhibition. We are in the era of rip, mix, and burn.

Four decades ago, however, new advances such as the integrated circuit

made the technology even smaller and more affordable. Quality of sound also improved. Sterling and Kittross note,

> In 1960, nearly two million FM receivers were sold, about 10 percent of them imports from Germany and Japan, where war-devastated electronics industries had been rebuilt into advanced technology, highly efficient operations. The average FM-AM set came down about $30, only $10 to $15 above the cost of an AM-only radio.[28]

Subsequently, a generation of youth arose listening to sound broadcasts far superior to any generation in the past. Stereo records and tapes flooded the consumer market in 1957, and in 1961 the FCC licensed the first FM broadcasts.[29] The stereo babies had arrived.

Top 40 radio programming pervaded the airwaves by the late 1950s and crossed over to FM. Specialized music formats lined the tuner dial from country and western to Motown, but rock 'n' roll dominated and became a new musical form that changed the way a new generation of youth listened and expected music to sound. The breadth of recording and producing talent that influenced sound designers today is too vast to cover in detail, but several figures can provide anchors for this analysis. In the early 1960s, record producer-auteur Phil Spector (with engineer Larry Levine) brought a multilayered sound to rock 'n' roll. Working initially in the mono format, he treated each recording like a theatrical production, offering a "wall of sound" that extended the range and reach of the medium. According to music historian Robert Palmer,

> The idea was not to hear individual instruments, but to have so many instruments playing a few simple melodic lines and rhythm patterns that the sound was deliberately blurry, atmospheric, and of course *huge*: Wagnerian rock 'n' roll with all the trimmings.[30]

The technical and aesthetic possibilities of stereo sound were showcased in this multilayered approach to music production. The Wagnerian model would in fact be taken up by the producers of *The Matrix* and used in the sound design of the film's ancillary audio and visual products, from music CDs to videogames.

By the mid 1960s, the Beatles and producer George Martin created a series of the highly innovative and experimental works as well including *Revolver*, *Abbey Road*, and *Sgt. Pepper's Lonely Hearts Club Band* album. *Sgt. Pepper* is particularly important for sound design because

it featured the use of sound effects such as farm animals, circus organs, and electronic noise. The compositions also varied musical styles, including classical, rock, blues, and jazz and assembled a diversity of song and lyric styles from classically structured ballads to found poetry. In the United States, the Beach Boys provided the American equivalent with *Pet Sounds*, which Paul McCartney has noted inspired *Sgt. Pepper*. The Beach Boys would go on to produce the highly inventive song "Good Vibrations," which incorporated the chilling low basses of a cello as used in horror movies and the oscillating and ethereal sounds of the Theremin found in classic science fiction films. The song is consistently praised as one of the most innovative and influential in rock 'n' roll recording—partly because of the intertextual exchange between movie sound and pop music.

Cinematic sound effects and strategies had pervaded contemporary music, and the exchange of technological innovation and experimentation flowed easily between the media. The interface resulted in a heightened awareness on the part of younger filmgoers and filmmakers of both music and sound. In short, the new generation demanded the same quality of sound (and design) from film that they had come to expect from their music and their own stereo systems. It is no surprise, then, that films of the late 1960s and early 1970s offered rock 'n' roll as not only a significant facet of the sound track but also part of the narrative storytelling and visceral intents of a film. The most notable rock 'n' roll films include Richard Lester's *A Hard Day's Night* (1964), Mike Nichols' *The Graduate* (1967), and George Lucas' *American Graffiti* (1973). Lucas even included the names of songs in the log line of each scene of his script for *American Graffiti*. Unlike the songs from classical musicals, rock songs in films were often not sung by the characters (or even linked to their characters or dialogue). Their intent was often to provide commentary or to set the mood or atmosphere of a particular scene. Traditional film scoring, which sought to be self-effacing, was superseded by sound track music motivated by diegetic factors or the need to establish emotional or visceral goals such as evoking nostalgia. *American Graffiti*, for example, interwove rock music into the fabric of the narrative as well as the mise-en-scène. In the context of the story, the radio DJ Wolfman Jack spins records for a local radio station, while the spaces of the nearby town swim in a "soup" of 1950s rock music that slips between source music and rock score. The music of the film was also enhanced by spatial factors. Lucas and Murch re-recorded the music in various locales such as a gymnasium and school hallways, which accentuated the reverberation off walls and surfaces. Music transcended its traditional status and became both

sound effect and narrative motivator, offering a sense of place and a sense of nostalgia. The haunting and hallowed music signaled that the endless days of youth were fading.

Not so unexpectedly, rock music and cinema found a common cultural ground. Each provided a forum for protest, experimentation, and personal expression and liberation. As Gerald Mast notes, "[R]ock music was the other artistic and social passion of the young audiences who were supporting the movies."[31] *Easy Rider* (1969) and other youth-oriented films tapped into the connection between the media and fostered a trend for Hollywood studios to exploit. The production of youth-oriented films became the norm. Rock documentaries like *Monterey Pop* (1968), *Woodstock* (1970) and *Gimme Shelter* (1971) emerged as a new genre of music film. Music became integral in the marketing of all types of mainstream Hollywood films, often providing crossover marketing on radio and unprecedented ancillary revenue. Top 40 placement of music from a film could increase revenue for films to recoup production costs and sometimes exceed box office grosses.

Rock music pervaded the aural design of films because of the sensibilities and demands of the young filmmakers who made these films and their new, young audiences. The importance of film music had shifted from film score to music sound track. New image and sound relations emerged, and music found a privileged status on the sound track that it had never before occupied. The self-reflexive nature of this privilege led to a new read on film sound and new expectations. Once the audience became acclimated to the possibilities of music and sound, the film industry could never go back to the noisy mono prints of the past or the simple reliance on music scoring and dialogue to carry the sound track of a film. A new era of sound beckoned with new music and new voices.

CONCLUSION

Ironically, it was neither rock music, new technology, nor even film scoring that activated one of the most profound changes in how film sound was perceived. Rather, it was a classical rendition of *The Blue Danube* and the avant-garde composition *Requiem for Soprano, Mezzo-Soprano, Two Mixed Choirs and Orchestra* placed in juxtaposition with images of a monolith and a changing universe. These pieces and these images heralded a new era in film sound and science fiction by offering not so much answers, but challenges and questions.

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Music and Speculation in *2001: A Space Odyssey*

IN AN INTERVIEW ABOUT *2001: A Space Odyssey* (1968), Arthur C. Clarke noted, "If you understood *2001* completely, we failed. We wanted to raise far more questions than we answered."[1] The importance of *2001: A Space Odyssey* for this study is that it raised questions about not only the origins of mankind but also the nature of sound in cinema, in particular questions in relation to the status and function of film music. Rather than employing a traditional music score composed specifically for the film, director Stanley Kubrick produced *2001: A Space Odyssey* with previously existing music as a deep structure to the narrative and its speculative aspects. As film historian Howard Suber notes, "The structure of *2001* is musical rather than dramatic—a fact that may help to explain some of the widespread critical hostility the film received when it was released. There are three movements to *2001*, but they are not the conventional three acts that critics and audiences expect to find in big-budget Hollywood movies."[2] This musical approach, which had never been applied to a science fiction film, transgressed the traditional music-image model found in classical Hollywood cinema, offering a new "cinema of sensations" to many young filmgoers. More important, it heralded the dawn of sound design, providing a unique example of the potential of sound in cinema. But the concept of mixing preexisting music and original images is not new. In fact, the idea of the "found" score reaches back into cinematic history to the birth of movies in the period before synchronized music and original scores, when directors such as D. W. Griffith compiled various musical cues to match the emotional or thematic needs of specific scenes.

In 1968, however, the unexpected juxtapositions of previously recorded classical and avant-garde compositions with the speculative imagery in

2001: A Space Odyssey caught many filmgoers and critics off guard. The uncanny effects challenged all who saw the film—so much so that the film became akin to a cinematic Rorschach test. What was the meaning of the monolith and its accompanying three-chord musical progression? Was it a catalyst in evolution? Or was it simply a beacon left by distant visitors, waiting for a call? The self-reflexive and stylistic constructions throughout the film encouraged a constant questioning of image-sound relations, clearly moving the sound track away from the notion of realism and charging it with speculative possibilities. While critics debated the significance and appropriateness of the music, younger audiences (the "stereo babies") embraced the sensations of the spectacle and began to reevaluate traditional reading codes for narrative and image-sound relations. Music in the film became an alien language to translate and experience. For many contemporary filmmakers, *2001: A Space Odyssey* set a new benchmark for science fiction cinema, elevating it from its "B" genre roots of the 1950s to an "A" genre with the potential to address important scientific, as well as social, concerns. Much like the monolith, *2001: A Space Odyssey* served as a catalyst for change, inspiring metaphysical speculations into human evolution and raising equally significant questions about film form that still resonate today. The most significant question for cinema sound being: if *2001: A Space Odyssey* could radically redefine how music and images interacted in cinema, why couldn't the entire sound track (dialogue, music, *and* effects) function in this same way?

THE MUSIC MODEL IN CLASSICAL HOLLYWOOD CINEMA

To understand the shift in image-sound relations brought about by *2001*, it is first necessary to examine the traditional music image model in classical Hollywood cinema, which finds its roots in classical music, the ballet, opera, and musical theater. Highly influential is the work of composer Richard Wagner (1813–1883). According to Percy A. Scholes, author of *The Oxford Companion to Music*, in Wagner's compositions the "German Romantic Movement of the nineteenth century found its completest [*sic*] musical expression."[3] His contribution to musical theater was a reconfiguration of musical structure in relation to narrative. In particular, his use of "leading motifs," or leitmotifs, established a system of unity for music and drama. For instance, the repeated use of musical fragments establishes a pattern to an overall composition, giving it structure and balance. In addition, musical fragments in association with a particular character provide audiences a means to track the character both

physically and emotionally throughout a narrative. For the composer, this approach can be both emotive (conveying to the audiences how to feel) and functional (providing a form of narrative enunciation or commentary). Scholes notes,

> By so designing these fragments that each aptly characterizes the situation or person with whom it is first associated, he [the composer] enables himself to bring particular thoughts and reminiscences to the memory of his audience at will, and so to strengthen the dramatic significance both of his vocal line and of his orchestral commentary.[4]

Cinema adopted these strategies even prior to the transition to sound. In early cinematic musical accompaniment, various emotional riffs or cues such as "misterioso," "dramatic tension," or themes of love provided the flexible catalogue of music offered to accompanists or orchestras in the motion picture theater.[5] These cues were usually drawn from "standardized snatches of operas, orchestral music and popular tunes."[6] Such leitmotifs sought to fuse musical movements with specific characters or events, offering sonic identification or signature phrases. Leitmotifs could be varied and incorporated into almost any of a film's other musical structures—for instance, to punctuate a romantic subplot or to foreshadow the entrance or presence of a character. The methodology unifies a narrative through repetition and variation, often mimicking the action and dramatic structures of the story.

With the transition to sound and the inclusion of synchronized dialogue and effects, the use and status of music changed somewhat in relation to the image and narrative. Rather than provide a constant stream of melodic constructions, music fragmented and integrated into the structures of the sound track, slipping in and out of scenes and around other sound constructions, particularly dialogue, that superseded both music and effects in terms of importance. The strategy of employing leitmotifs became standard to the mode of music production in supporting classical Hollywood narrative. Two primary distinctions of film music evolved: score and source music. Score generally refers to the entire body of music on the sound track. In the classical period, this nondiegetic music often featured original symphonic orchestrations from notable composers such as Dmitri Tiomkin, Bernard Herrmann, Max Steiner, Erich Wolfgang Korngold, and others. During the rise of science fiction cinema in the 1950s, Tiomkin created the ominous compositions for Howard Hawks'

classic production of *The Thing* (1950), while Herrmann, already famous for the music in *Citizen Kane* (1941), wrote scores for two seminal science fiction works, *The Day the Earth Stood Still* (1951) and *Fahrenheit 451* (1966). Contemporary science fiction composers such as John Williams, Jerry Goldsmith, and James Horner recall these past masters in their work for *Star Wars* (1977), *Star Trek: The Motion Picture* (1979), and *Aliens* (1986).

The score most often functions as an omniscient presence, offering subtle emotional and narrative cues that tell the audience how to feel. Scored music has been compared to "wallpaper" by Stravinsky, "because it fills in cracks and smoothes down rough textures" of cinema's formal processes of editing, cinematography, and the like.[7] Although this is true in some respects, film historian David Bordwell notes that "the classical film score enters into a system of narration, endowed with some degree of self-consciousness, a range of knowledge and a degree of communicativeness."[8] Music, then, is not entirely invisible. Rather, it often has ideological aims and implications for the narrative. For instance, it can foreshadow a character's emotions, recall past events, or establish a period or era through instrumentation and orchestration. But these functions are determined and held in check by classical narrative and image considerations, so score maintains a specific and limited status, a convention *2001: A Space Odyssey* violates.

In contrast, source music is motivated within the world of the story, usually signifying a specific location or era relevant to the drama. This placement of music has been used to ironic effect in science fiction, particularly in Kubrick's *A Clockwork Orange* (1971), which features a version of "Singin' in the Rain" sung by Malcolm McDowell during a brutal assault scene.

Source music can be an original composition or a preexisting piece and can be motivated by events or objects on screen (for instance, a radio within a scene) or off screen (a radio in the next room). Source music often hides narrative aims within a scene, offering commentary or narrative direction in a less-intrusive manner. Beginning in the 1960s, the introduction of rock'n'roll scores navigated the boundaries between source music and score, to create new associates and intents, such as nostalgia, irony, or intertextual references in films such as *The Graduate* (1967), *Easy Rider* (1969), and *Butch Cassidy and the Sundance Kid* (1969). Science fiction films blurred the lines even further, weaving source music into the narrative action and themes. *Close Encounters of the Third Kind* (1977) incorporated the Disney classic "When You Wish Upon A Star" into

FIGURE 2.1. *A Clockwork Orange* (1971) Copyright © 1971 Warner Bros. Inc. Director Stanley Kubrick redefined music and image relations in contemporary science fiction cinema with *A Clockwork Orange* and *2001: A Space Odyssey*.

the dialogue and then into the main score during the final "mothership" sequence of the film as a means of connecting youthful wonder and space travel (not to mention the auteur influences of both Walt Disney and Steven Spielberg). Similarly, *Back to the Future* (1985) incorporated the song "The Power of Love" (by Huey Lewis and the News) into both the narrative (as the song Marty McFly and his band play at the talent show audition) and score, and even spun the song off into a new context as hit single on top 40 radio. The navigation between score and source is in part a legacy from the rethinking of traditional music-image relations as well as the shifting industrial strategies related to marketing and youth appeal brought about by *2001: A Space Odyssey* and other films of this period.

In classical Hollywood narrative, traditional scored music formed a specific set of image-sound relations, such as accompanying a dramatic moment of a scene, cueing an action, playing through an action, summarizing a dramatic turn, or offering psychological subtext.[9] These relations strove to create unity and rested within the boundaries of classical narration. Traditional musical scores thus remained somewhat self-effacing and subservient to the image and dramatic action. In contrast, *2001: A Space Odyssey* challenged the traditional linkages between narrative and music, both in terms of production and aesthetic applications. According to Vivian Sobchack, "Kubrick . . . uses 'unoriginal' film music originally,

seeing music not only as supportive of his visuals but also as an active participant in the creation and/or destruction of image content."[10] The music within the film is self-conscious in its narrative aims, as well as an overt participant in the spectacle. As a result, the image-sound constructions demand attention, elevate the status of the genre, and require new reading strategies, which address both the visceral goals of the film as well as the intellectual aims. Like the best literary science fiction, *2001: A Space Odyssey* demanded speculation about not just the future but also its own formal construction.

CHALLENGING THE CLASSICAL HOLLYWOOD MUSIC MODEL

Ironically, the pattern of music production for *2001: A Space Odyssey* was initially poised to follow the traditional route of creation and integration. In December 1967, Kubrick contacted composer Alex North, whom he had worked with on *Spartacus* (1960), to prepare an original score for *2001: A Space Odyssey*. This request was at the urging of MGM, which had rejected Kubrick's initial suggestion of using classical music recordings in the film. North was intrigued by the concept of the film that was to include only twenty-five minutes of dialogue and relatively few sound effects.[11] During a two-week period in England, North ambitiously composed and recorded approximately forty minutes of music, but then the process suddenly stalled. North recalled several weeks of waiting:

> [In February of 1968] I received word from Kubrick that no more score was necessary, that he was going to use breathing effects for the remainder of the film . . . I thought perhaps I would still be called upon to compose more music. . . . Nothing happened. I went to the screening in New York, and there were most of the "temporary tracks."[12]

It has been suggested in various accounts that the delays and use of North to score the film were a means by which Kubrick could appease MGM and that he never intended to use an original score. It is not surprising, therefore, that North and other composers were harshly critical of *2001: A Space Odyssey*, because they saw the use of preexisting music as a mistake, primarily for aesthetic reasons (the context of the pieces did not fit the time period presented). It is interesting to note that they did not mention the fact that Kubrick's innovative approach challenged not only the traditional music-image model but also the traditional mode of

music production, which these composers were so dependent upon for their livelihood.

Nonetheless, the conceptual audio design was unique for the genre. Kubrick treated *2001: A Space Odyssey* as if it were an animated feature and, given the high number of special effects shots (more than two hundred), the film could almost be categorized as animation. Instead of unifying the film with an original score late in postproduction, as is the case with most live-action features, Kubrick edited the film in synchronization with a previously determined musical pattern. Consequently, the classical and avant-garde compositions provided the deep structure for the ideas and questions that the film's narrative proposed. Thematically, the sound track emphasized the sonic mechanics to accentuate the celestial mechanics at work in the story.

This shift in the mode of production necessitated a shift in reading strategies for filmgoers. A primarily literary reading of the text and dialogue was not encouraged. In fact, only approximately 40 minutes of the 149-minute film has dialogue, and the first lines of dialogue are not spoken until thirty minutes into the film. Instead, a careful reading of image-sound relations was demanded as part of an integrated strategy of meaning production and visceral intents. *2001: A Space Odyssey* became the model for the future of spectacle cinema (in terms of sound and special effects), but it was also science fiction, a genre that encourages analysis and discursive play. For every formal convergence of image and sound, monolith and music, ship and waltz, questions arose as to intent and meaning. It is important to note that Kubrick reiterates the importance of the "non-verbal aspects," whereas Arthur C. Clarke notes the thematic premises of "hierarchy" and "humanity."[13] It is this tension between the visceral and the intellectual components that reveal the strength and the impact of the film and its musical design.

Mimicking the narrative structure of the film, the musical selections in *2001: A Space Odyssey* collapse different time periods and musical styles from eighteenth-century classical compositions to the contemporary Hungarian avant-garde. These selections range from Johann Strauss' *The Blue Danube* to György Ligeti's *Requiem for Soprano, Mezzo-Soprano, Two Mixed Choirs, and Orchestra*. The historical context of the pieces, however, seems tangential to their use in the film. Kubrick notes,

> Don't underestimate the charm of "The Blue Danube," played by Herbert von Karajan. Most people under 35 can think of it in an objective way, as a beautiful composition. Older people somehow

> associate it with a Palm Court orchestra or have another unfortunate association, and generally, therefore, criticize its use in the film. It's hard to find anything much better than "The Blue Danube" for depicting grace and beauty in turning. It also gets about as far away as you can get from the cliché of space music.[14]

The goal was to strip away the traditional associations and reconfigure meaning within a new narrative and formal context.

Exemplifying postmodern tenets, Kubrick brought together classical music (high art) and science fiction (low art), rejected classical narrative techniques on behalf of spectacle, and offered a range of identification patterns activated by the characters of David Bowman as well as the computer, HAL 9000. For Kubrick, it was essential that filmgoers could find themselves awash in the film's images and music to truly experience the future and the possibilities it presented. Balancing this intent were the questions the film posed about human evolution and celestial mechanics.

The first and most recognizable piece of music in the film is *Also Sprach Zarathustra*, a three-note progression, C-G-C, which has forever become associated with *2001: A Space Odyssey* and the mysterious monolith. Richard Strauss composed *Also Sprach Zarathustra* (translated as Thus Spoke Zarathustra) in 1898. The Berlin Philharmonic Orchestra, conducted by Karl Böhm, performed the version used in the film. In the opening credit sequence, the piece is associated with the alignment of the moon, earth, and sun. The building grandeur accentuates the upward movement of

FIGURE 2.2. *2001: A Space Odyssey* (1968). The juxtaposition of classical music and the evocative images of space flight stripped away the traditional associations for both.

FIGURE 2.3. *2001: A Space Odyssey* (1968).

these masses and connects the celestial mechanics of the universe with the rhythmic mechanics of the music. This spectacle of alignment emerges as a leitmotif throughout the film, foreshadowing knowledge, development, and evolution. The association of the music with the monolith and the film are a testimony to the enduring power of spectacle and image-sound identification. The piece recurs in both the "Dawn of Man" sequence and at the end of the film, framing the film, not surprisingly, like a three-note musical chord.

In this instance, the intertextual connections of the piece demand some examination. The title of Strauss' composition refers to Frederic Nietzsche's work of the same name. Yet the distance between the works appears only referential. According to Strauss,

> I did not intend to write philosophical music. I meant to convey by means of music an idea of the development of the human race from its origin, through the various phases of its development, religious and scientific.[15]

What seems most important both in the music and the film is the notion of progression. Michel Ciment explains:

> Richard Strauss's symphonic poem is no more an illustration of Nietzsche's vision than is Kubrick's film, itself a symphonic poem. Each of them develops and reworks that vision into a completely independent work of art. The death of God challenges man to rise

> above himself, and *2001* offers the same progression as in Nietzsche, from ape to man and from man to superman.[16]

Whereas Strauss transformed the progression into music, Kubrick reconfigured it through image-sound spectacle. The musical selection underlines the philosophical nature of the work. It is in conjunction with this music that the "moonwatcher ape" gains understanding. He associates the bone with killing. Similarly, we are meant to associate the music with the monolith, which by implication may be a prime catalyst in the evolution in mankind. In some respects, the monolith serves as an evolutionary alarm clock, complete with musical accompaniment. Once again, an alignment of the sun and monolith support the notion of order out of chaos and celestial progression. Its final use ushers in the birth of the "star child" at the end of the film, which serves as the closing punctuation to the idea of ongoing evolution.

Closely linked to the monolith is the *Requiem for Soprano, Mezzo-Soprano, Two Mixed Choirs, and Orchestra*, which was composed by György Ligeti. The Bavarian Radio Orchestra, conducted by Francis Travis, performed the version used in the film. The music presides over the appearance of the monolith at three points in the film: first, when it is shown with prehistoric man; second, when it is examined by the scientists on Clavius; and, third, when it floats through space during the Jupiter mission. According to Ciment,

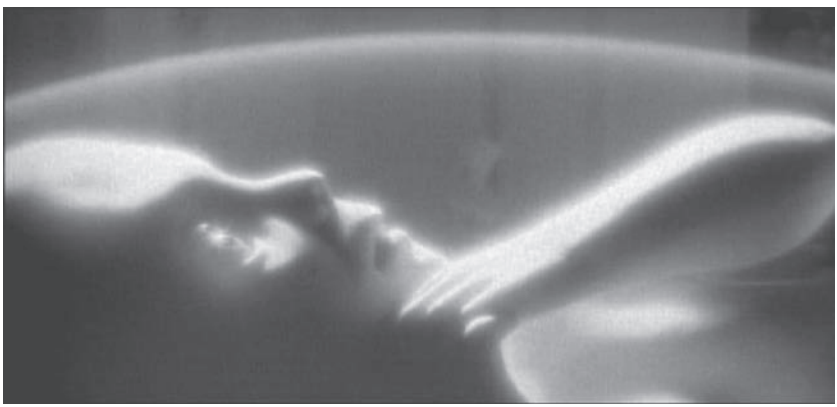

FIGURE 2.4. *2001: A Space Odyssey* (1968). The sound of the buzzing monolith serves as an evolutionary alarm clock that transforms man from "moonwatcher" to "star child."

> Gyorgy Ligeti's oratorio, which serves as a musical leitmotiv for the presence of the monolith, reflects Clark's idea that any technology far in advance of our own will be indistinguishable from magic and oddly enough, will have a certain irrational quality.[17]

In the prehistoric man sequence, the piece plays over the early-morning appearance of the monolith to the apes. Initially, the sound track includes the frantic grunts and growls of the apes within the narrative world as the mysterious object awakens them, but then with the rising sun, the apes begin to touch the monolith and the music overtakes the other sound elements. The on-screen noise drops away completely from the mix, and a cinematic abstraction builds. The privileged status of the music reveals a shift in subjectivity within the minds of apes. It signals the buzz of thought and understanding. The image of the sun peaking over the monolith then ends abruptly. In the next scene, the ape discovers that the bone can be used as a weapon, which supports the notion that the monolith is somehow initiating a change in thought and, hence, the course of evolution.

This idea is reinforced by the recurrence of a similar scene on Clavius. When Dr. Heywood Floyd (William Sylvester) visits the moon, the scientists are drawn to the monolith for a photo opportunity. Again, the Requiem plays and becomes unnerving. The scene, though, is humorous as the scientists gather for a picture like a family at a national monument. Thematically, the visual design indicates an attention to order, grouping, and alignment. It also punctuates the context and the place, both physical and metaphysical. These representatives of mankind are on a celestial body other than the earth. The event uncovers not just the monolith but also all of the work, the technology, and the insights that it took to reach this location. The moment of this discovery represents the ability of humanity to achieve the goal of spaceflight, yet at the same time, the monolith and the music punctuate the utter mystery of mankind's origins, evolution, and connection to the universe. With the monolith uncovered and once again exposed to the sun, a sonic response is triggered. A high-pitched buzz is heard from the perspective inside the scientists' helmet headsets. The sound and message are mediated by technology, which is the pivotal transition point between these first two sequences. Specifically, the moment refers to the match on action cut between the bone and the spaceship, which uses an ellipsis to underscore the idea of technological progression. Once again, with the buzzing and the music, there is a shift in subjectivity cued by sound, and the echo to the early apes is not lost. The

sequence again cuts to a pivotal period in human development, the Jupiter mission—18 months later.

In the Jupiter and Beyond the Infinite sequence, the Requiem traces the flight of the monolith as it aligns with the planets and disappears, triggering the "star gate" sequence. In this instance, the buzz of the message transforms into movement through the infinite and it is a journey David Bowman (Keir Dullea) and audience members are encouraged to take together. During this sequence, many younger filmgoers participated in fan rituals of drug consumption, pursuing the aim of consciousness raising on cinematic and psychological levels. The ritual becomes akin to light shows at rock concerts and the atmosphere of drug experimentation as a means of achieving synchronization with the music. During the slit-scan sequence (named after the photographic process invented by Douglas Trumbull that created the corridor of light that Bowman passes through), the music transforms and transitions. It segues into another Ligeti piece, entitled *Atmospheres*, performed by the Sudwestfunk Orchestra, conducted by Ernest Bour. In this sequence, image and sound spectacle converge. Bowman's subjectivity is shared with the filmgoer in this psychedelic trip through galaxies, stars, and the unknown. The point-of-view shots and the privileging and isolation of the music on the sound track encourage this transference. The music settles and transforms when Bowman reaches his final destination. In the brightly lit bedroom, distorted samples from the music fragment on the sound track into whispers and laughter. The electronic build-up makes it unclear whether this is an attempt at communication or extraterrestrial observations of Bowman (like layers of musical voice-over). Regardless, the music is anthropomorphized, yet still mysterious and inexplicable. Neither Kubrick nor the film overtly expresses the meaning and justifications of the chattering music, leaving an open-ended interpretation.

PERFECT TIME AND A SLOW DEATH

One of the most identifiable musical pieces that support this odyssey through the universe is *The Blue Danube* by Johann Strauss, performed by the Berlin Philharmonic Orchestra and conducted by Herbert von Karajan. The piece accompanies Dr. Floyd in his shuttle trip from Earth to the spaceport. It adds a sublime yet whimsical quality to the events such as the movement of the shuttle, the weightlessness of the cabin, and Floyd's pause to read the instructions for using the zero gravity restroom. More important, the spectacle of music and movement comments on

the forces of celestial mechanics at work in the film. In the synchronization of images to the music, the physics of the universe adhere to an underlying structure of musical mathematics in perfect time. There is an important commentary here. Although the contact civilization controlling the monolith seems to have mastered these elements, humanity is only a part of their workings and only beginning to understand. The waltz profoundly recasts technical notions of physics, gravity, and universal forces into visceral and human terms. The visual spectacle set to the waltz implies a dance of grace and progression and ultimately a courtship toward procreation. Ship and station substitute for sperm and ovum. It is a technological conception that foreshadows the true conception of the "star-child" at the end of the film. Thus, despite its apparent levity, the composition brings a deeper structure to the film by questioning the celestial forces at work in the universe.

In contrast to the whimsy of *The Blue Danube*, *Lux Aeterna*, composed by Ligeti, performed by the Stuttgart Schola Cantorum and conducted by Clytus Gottwald, provides a more ominous commentary on the proceedings. This disconcerting music leads Floyd to the site where the monolith has been unearthed on Clavius. The piece is transitional in many respects, but casts a veil of mystery and fear over the human activities and understandings. It punctuates the mistrust and uncertainty that pervade the human interactions throughout the film. In particular, Floyd's lies about his presence on the space station and, more important, HAL's unstable and distrustful relationship with the crew of the Jupiter mission. As Ciment notes, "*2001* presents a world of non-involvement in which each person is extraordinarily detached, imprisoned in his allotted role, living in icy solitude."[18] The use of *Gayne Ballet Suite* (Adagio), composed by Aram Khatchaturian and performed by the Leningrad Philharmonic Orchestra with Gennadi Rozhdestvensky conducting, as source music for Dr. Poole's workout regime on the ship bears this out. This music is desolate and soothing, a candid portrait of the character who selected it.

The most important use of source music, though, comes at the end of the Jupiter sequence. It is the song "Bicycle Built for Two" that HAL sings as his higher brain functions are being cut off by Bowman. The song functions on multiple levels. Whereas the other pieces in the film deal with progression, this piece deals with HAL's regression. It is strongly associated with HAL's past, his programming and his makers. Thematically, the moment is again about origin and the question, Where do I come from? As Bowman disconnects the computer, HAL reverts, remembering his youth in rhyme and song. This song is an intertextual reference

to early artificial intelligence development. "Bicycle Built for Two" was the first song sung by a computer in an experiment done by John Kelly at Bell Labs.[19] Another layer of complexity was added to the song, as Clark notes, "In the early 1960s at Bell Laboratories I heard a recording of an Illiac computer singing 'Bicycle Built for Two.' I thought it would be good for a death scene—especially the slowing down of the words at the end."[20] The song combines issues of love, death, and madness as it calls for answers to questions of love and fidelity. In the formal manipulation of the source music, Kubrick reiterates themes of fragmentation and madness that are common in his films. The slowing of the song also foreshadows Bowman's regression and paradoxical evolution into the infant "star-child." Once again, the film reprises the three-chord progression of *Also Sprach Zarathustra*, leaving open-ended questions of mankind's origins and evolution.

CONCLUSIONS: A NEW SOUND CONSCIOUSNESS

The profound and unexpected integration of these classical and experimental musical works into *2001* proved challenging for most critics and filmgoers, who were expecting a traditional science fiction narrative with traditional film music. The secret language of music that once only whispered to audience's emotions was now speaking to them directly and posing questions. The questions that the film asked transformed the status of science fiction cinema, recalibrated audience expectations about image-sound relations (particularly in relation to spectacle), and inspired a generation of filmmakers. Echoes of the film's impact clearly resonate in films such as John Carpenter's *Dark Star* (1974), George Lucas' *Star Wars* (1977), and Steven Spielberg's *Close Encounters of the Third Kind* (1977). The transgressive use of music-image relations in *2001: A Space Odyssey* offered a challenge to new filmmakers to question not just the status and function of music but also the status and function of all of the elements of the film sound track. With the release of this film, a new era in sound consciousness was born.

Part II

Sound Montage

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The Convergence of Hollywood and New Wave Science Fiction

THE PRODUCTION CREDIT THAT READS "Sound Montage" was in part a clever ambiguity hidden in the opening credit sequence of *THX 1138*, the 1971 George Lucas feature that was based on his award-winning 1967 student film *Electronic Labyrinth THX 1138:4EB*. At the time of the feature film's production, the Hollywood labor unions (or, more accurately, the San Francisco Stagehands Union) did not recognize sound montage as a production designation, which was in part the reason for using it. Sound designer and editor Walter Murch explains, "At the start of my career, I was working nonunion, and the title 'Sound Montage' appeared vague enough not to set off any alarms."[1] The "alarms" and the consequences that Murch and his producers sought to avoid were fines and control by the sound unions, which demanded strict divisions of labor within the production ranks and a clear hierarchy of job duties and assignments. For producer Francis Ford Coppola and director George Lucas, the deception was essential if they were to ever have control of the postproduction of their films (away from studio intervention). George Lucas notes, "If you wanted to be truly creative and experimental, you had to work outside the system—which is exactly what Francis was doing when he founded American Zoetrope [the company that produced *THX 1138*] in San Francisco."[2]

For Murch, the autonomy and flexibility allowed him unprecedented latitude to explore sound as craft *and* art. By overriding rigid divisions of labor, Murch could move freely between the positions of sound recordist, sound editor, and mixer to create the unique montages for the film.

In this chapter, I examine the convergence of "sound" and "montage" and how it represented an attempt by these filmmakers to bring together two divergent stylistic movements, specifically the traditions of the

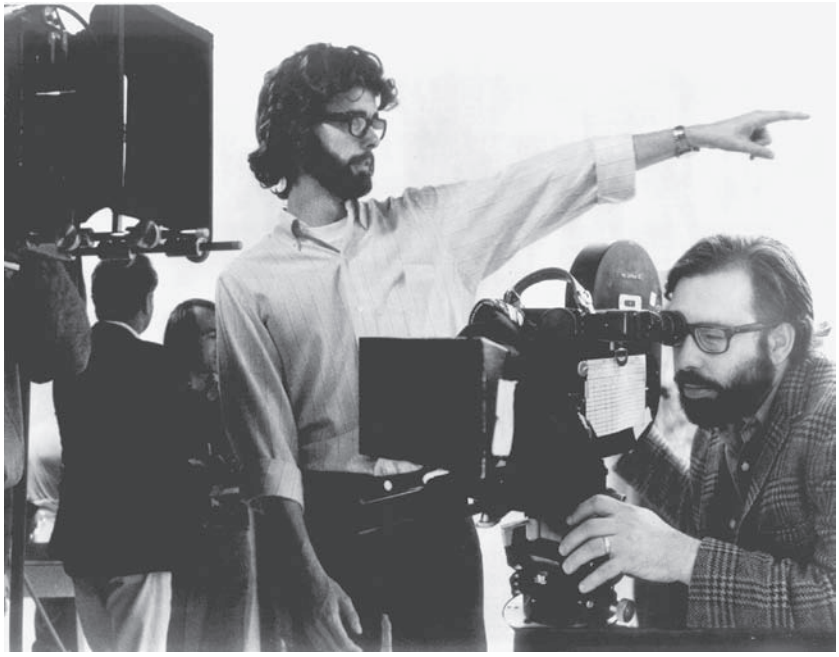

FIGURE 3.1. George Lucas and Francis Ford Coppola on the set of *THX 1138* (1971). By moving the film's postproduction to the San Francisco Bay area, Coppola and Lucas fostered a new environment for exploring sound as craft *and* art.

classical Hollywood cinema and the idiosyncratic experiments of the French New Wave as a means of reinventing and revitalizing Hollywood cinema. In the American cinema of the 1960s and early 1970s, narrative flow, naturalism, and continuity were challenged in this process of re-examination and convergence. It is important to keep in mind that genre cinema was well suited to accommodate these new methods of image and sound manipulation. The science fiction genre became particularly appealing for filmmakers and filmgoers because of its ability to foster experiments in film form and displace social and political critiques of the period. To understand this connection between form and genre, I draw examples from three groundbreaking French science fiction films: *La Jetée* (1961), *Alphaville* (1965), and *Fahrenheit 451* (1966), and in chapter 4 I extend this analysis and present a detailed case study of the largely overlooked American film *THX 1138* (the original theatrically released version), which presents a dystopia where "love is a crime" and religion, consumerism, and technology have fused to create an authoritarian

system that denies individuality. The film is a clever and often satirical critique of American consumer society and corporate-political control.

In *THX 1138*, Robert Duvall plays the lead role of THX, who is charged with "crimes of perversion" for falling in love with his mate (played by Maggie McOmie). After enduring torture and imprisonment, he escapes, but he must then navigate the confusing labyrinth of an underground world as robotic police pursue him. In the end, he escapes to the surface, and an uncertain future. As with *2001: A Space Odyssey*, *THX 1138* employs musical strategies to construct new image-sound relations and establish this possible "future." Murch, however, recast the traditional instruments of the orchestra with organic instruments and organized the sounds into a symphony of *musique concrète*. He notes, "It is possible to just listen to the sound track of *THX* exclusive of the dialogue. The sound effects in the background have their own musical organization."[3] In the end, the sound montages in the film rival the innovative imagery that Lucas imagines, but, more important, the montages provide the basis for the sound experiments and tactics that would echo through contemporary Hollywood cinema, particularly science fiction cinema, for years to come. These montages and audio techniques would eventually lead to sound design.

THE MOVEMENT OF MONTAGE

Although "sound montage" masks certain production considerations related to *THX 1138*, the designation identifies a deeper trend in Hollywood cinema at this time. Between 1960 and 1975, filmmakers began experimenting with refined image-sound relations that can be found in films such as *Psycho* (1960), *2001: A Space Odyssey*, *The Graduate* (1967), and *Bonnie and Clyde* (1967), among others. This approach challenged traditional "realistic" modes of representation or "naturalism" with an aesthetic that tended toward artifice, formal experimentation, and self-reflexivity. This approach demanded that filmgoers assume more aggressive reading strategies in terms of narrative comprehension and visceral intents. The art cinema movement in Europe and throughout the world inspired this trend, and the processes and techniques fostered within this movement were taken up by a new generation of American filmmakers, who brought them into mainstream Hollywood cinema.

During this period, Hollywood studios faced unprecedented financial losses estimated at more than $600 million dollars industrywide.[4] The losses were due primarily to changing patterns of media consumption.

Television, for instance, drew many older Americans away from motion picture theaters as an inexpensive alternative to filmgoing. As a result, the studios sought desperately to cultivate the lucrative youth market and looked to a new generation of filmmakers whose works had already begun to engage film style and narrative in new ways. The studios hoped these new voices and their penchant for experimental modes of representation would speak directly to younger audiences, drawing them into theaters.

Leading the way were filmmakers like Arthur Penn, Robert Altman, Francis Ford Coppola, William Friedkin, Martin Scorsese, and George Lucas. Examples of their innovative applications of sound can be heard in the gunshots recorded for *Bonnie and Clyde* (1968), the sound perspectives brought to the music in *American Graffiti* (1973), the syncopated and jarring sound effects cut into *The Exorcist* (1973), the montages in *THX 1138* (1971) and *The Conversation* (1974), and the layered dialogue exchanges recorded for *Nashville* (1975). In fact, nearly all of these narratives use self-reflexivity to call attention to sound apparatus or audio-recording processes in some way. The drama in *American Graffiti* is punctuated by the rock'n'roll playlist of the local radio station; *The Exorcist* features scenes in which demonic voices are recorded and analyzed; *THX 1138* and *The Conversation* both center on audio surveillance, the latter no doubt inspired by the Watergate paranoia around recording technology; and, finally, *Nashville* features a series of recording sessions and performances, all caught on tape. It could be argued that these American filmmakers were more interested in film sound during this period than American film critics were. According to Murch,

> Only a handful of directors . . . really understand the use of sound as a modulator in dramatic action. Orthodox moviemakers think of assembling sound like getting a negative back from the lab; it's something to be farmed out. They would be impatient with any subtleties.[5]

The inspiration for this experimentation in film form can be traced to the rising popularity of films by international directors such as Ingmar Bergman, Federico Fellini, Akira Kurosawa, François Truffaut, Jean-Luc Godard, and Michelangelo Antonioni. World cinema, particularly the European art cinema, offered a vibrant and innovative alternative to classical Hollywood cinema, which was at this time producing big-budget

and often lackluster films. The 1966 success of Antonioni's *Blowup* energized the American art house movement, and film societies on campuses across the country began appearing and programming foreign films. The "Movie Brats" were watching, studying, and, most important, listening.

Already well versed in the ways of old Hollywood from countless screenings on television and in film classes, the new generation of American filmmakers looked to the films of Truffaut (*400 Blows*, *Fahrenheit 451*, *Jules and Jim*, *Shoot the Piano Player*), Alain Renais (*Hiroshima mon amour*, *Last Year at Marienbad*), Chris Marker (*La Jetée*), and Godard (*Breathless*, *Alphaville*) for inspiration and new aesthetic approaches that would extend the boundaries of film as art and not so altruistically allow them entrée into the Hollywood system. Lucas notes, "I *loved* the style of Godard's films. The graphics, his sense of humor, the way he portrayed the world—he was very cinematic."[6] Not surprisingly, Lucas' emulation of this style in his student films (particularly his science fiction short *Electronic Labyrinth THX 1138 4EB*) would bring him to the attention of Warner Bros. studio, which would distribute the feature version of *THX 1138*. Like so many other filmmakers of his generation, Lucas embraced the "auteur theory," which posited the creative vision of a film with its director, and put its principles into practice. These New Hollywood filmmakers emulated their cinematic heroes like Truffaut and Godard, and, in doing so, they aggressively began controlling every aspect of the filmmaking process from picture editing to film sound mixing. Lucas, in fact, would move the postproduction for *THX 1138* to the attic of his rented Northern California home so that he and Murch could work in split shifts and then meet for dinner to discuss their strategies for picture and sound editing.[7]

NEW SOUND WAVES

In many respects, the conditions that gave rise to the French New Wave were similar to those that informed the American film renaissance between the 1960s and 1970s. In France in the late 1950s and throughout the 1960s, the French film industry like the Hollywood film industry was undergoing changes in terms of economics, personnel, and technology. Fearing in part the influence of Hollywood films on French media and culture, the French government began to subsidize new filmmakers through the "avance sur recette" system, which was funded by levies on ticket sales and was to be replenished by the future earnings of the films it subsidized.[8] In addition, portable camera and sound technology, as well

as low-light film stocks, made film production easier, faster, and more mobile. Finally, a new generation of filmmakers including Truffaut and a number of critics grouped around the film journal *Cahiers du cinéma*, which was founded in 1951 by André Bazin and Jacques Doniol-Valcroze. They seized on these changes as an opportunity to make their own low-budget and often-personal films, which challenged the traditional cinematic establishment and its output of historical dramas.

French New Wave directors were distinguished by their interest in film theory and criticism, which directly informed the style and narratives of their films. They have been credited with formulating the idea of authorship in cinema, specifically a critical model of evaluation and a mode of film production, which posited the sensibilities and "signature" of a film in the hands of the director. As a result, the films of the New Wave were replete with references to their Hollywood idols such as Alfred Hitchcock, Howard Hawks, John Ford, and Humphrey Bogart, who were often the subjects of the critical inquiries of the New Wave theorists and directors. More important, though, embedded within these lines of inquiry were explorations of mise-en-scène, meaning production and "realism," which translated into experiments with film form and genre.

Godard's work is particularly useful for this study because of his stylistic innovations with editing and sound and his experimentation with genre. It was his intention to create a revolutionary cinema that attacked "bourgeois concepts of representation" and challenged audience's perceptions with unpredictable image-sound relations.[9] His films are filled with formal experiments that navigate both the image and sound track in the production of meaning. In general, despite their admiration for Hollywood films, the French New Wave filmmakers found it necessary to deconstruct these works and offer an alternative cinema that screened their view of the world. They tended toward a much more idiosyncratic and personal cinema. For some in the movement like Godard, this intention combined with a Marxist position that informs many texts of this period. Dudley Andrew explains:

> The Marxists call for a critical cinema which will "deconstruct" itself at every moment. Instead of fabricating an illusion, this cinema will let the viewer see beneath the images and the story to the process of creation itself. . . . Every subject should be exposed to its socio-economic underpinnings; every signification (every image and narrative relation) should expose its own work. This way we can strive toward the conscious reshaping of the world.[10]

The approach was akin to metafiction in literary circles, which overtly examined the nature of its own narrative content, creation, and reception. For both movements, a self-reflexive awareness of style informed the narrative designs, a lesson referenced by American filmmakers. Style informed meaning production, and, in some instances, it became the meaning. As a result, the films of the French New Wave were filled with examples of cinematic play that included handheld camera work, freeze-frames, jump cuts, and rapid editing patterns on both the image track and sound track, all of which proved self-conscious and self-reflexive. For the French New Wave, the integration of these techniques was a means of breaking down naturalized codes of cinema and thus revealing to filmgoers the means by which perception is ultimately conditioned by culture, technology, and ideology. Lest all these "innovations" be attributed to such intentions, it must be noted that some of the techniques came about as a result of the filmmaker's inexperience with the filmmaking equipment and the need for stylistic repair work brought on by lack of usable footage and sound, but, ultimately, they theorized these "mistakes" and intentionally inscribed them in their narratives.

It is important to note that science fiction cinema appropriates these strategies and shares the concerns related to challenging audience perception through film form, examples of which we have already seen in the case of *2001: A Space Odyssey*. It is not surprising, then, that the science fiction genre became a popular and familiar framework in which the new generation of American filmmakers could explore the lessons learned about film form offered by the French New Wave. The French New Wave itself had first recognized the genre as a useful means for stylistic experimentation, cultural critique, and perceptual challenge with the release of *La Jetée* (1961), *Alphaville* (1965), and *Fahrenheit 451* (1966). In terms of sound, these films employ multiple layers of voice-overs, erratic volume level changes, symbolic uses of sound effects, abrupt sound transitions akin to the visual jump cut, shifts in sound perspective, and the conceptual use of sound montage. By using these formal techniques, the filmmakers shattered reality, broke it into fragments, and then reorganized the pieces to create alternative futures (and points of view). It is also important to keep in mind that these techniques challenged audiences not only to rethink film form but also to address the larger issues of technology, rationality, history, and memory as they relate to authority and society. As with all science fiction films, they are as much a critique of the present as they are a representation of the future.

LA JETÉE

Most striking among the French New Wave films is Chris Marker's *La Jetée,* which consists almost entirely of black-and-white stills except for one full-motion shot of a woman blinking. The fragmentation of the image track strikes at the very nature of cinema as it challenges the idea of the "moving picture." Rather than unify the narrative in a classical manner through live action and continuity editing, the story structure and formal unity of the images are forged primarily by the sound track.

The sparse composite of elements includes a voice-over, music, and sound effects, which are applied to exacting and elegant effect. In their use, the model of traditional cinema and its naturalized codes are upset, just as the narrative world is upset by war and devastation. The story of *La Jetée* centers on a concentration camp prisoner in post–World War III Europe and his forced participation in time-travel experiments to contact the future for assistance in the form of resources and technology. This prisoner is chosen to participate because of his strong ability to retain memories. As the experiments proceed, the prisoner makes contact with a woman in the past with whom he falls in love, but fate cruelly unites them only through death. The image that the prisoner recalls so vividly

FIGURE 3.2. *La Jetée* (1961). The unity of images presented in this French New Wave Science Fiction film is forged by the soundtrack, which consists of the time traveler's voiceover, music and sound effects.

from his childhood (the one that makes him such an effective time traveler) is in fact the image of his own death as an adult on the jetée at an airport. The narrative pattern is cyclical and evocative, and the film inspired a host of Hollywood time-travel narratives, including *The Terminator* (1984), *Back to the Future* (1985), and, of course, Terry Gilliam's remake of *La Jetée,* retitled *Twelve Monkeys* (1995).

Like other French New Wave films, *La Jetée* deconstructs and reconstructs history and memory through film form. Echoes of Nazi Germany and the concerns of the nuclear age are apparent in the constant sound of whispers that punctuate the images of the time-travel experiments. Some words are spoken in German; others transform into subliminal messages of suggestion, as numbers are being counted off or down. This verbal play easily becomes a metaphor for control and critiques the perils of science and technology, which are themes echoed in many of the Hollywood science fiction films of this period, including *THX 1138*, *Planet of the Apes* (1968), and *Westworld* (1973). The anxiety expressed in these films is emblematic of the Space Age, which was marked by government development and control of advanced science and technology from the Manhattan Project to the Apollo missions. The projects promoted not only the development of new technology but also nationalism and geopolitical distrust.

In *La Jetée*, the director often uses sound effects to unify and comment on the imagery, which promotes a multilayered reading strategy. In one sequence, the sound of the prisoner's heartbeat bridges a series of shots of the researchers and images of the past and future. The sound effect maintains and anchors the multiple time frames. The construction of the sound is telling: it is recorded in close microphone perspective, cueing codes of intimacy (and a control of the subject's life). Through sound mixing, the volume of the effect increases and in some instances cuts off sharply to indicate a time shift or break in the process. This combination of techniques transforms the status of the heartbeat from a subjective sound effect heard by the character to overt narrative commentary regarding his physical condition like a heart monitor.

In short, the sound moves from a diegetic effect from the character's perspective to a privileged effect with the same status as spoken narration. So, even sound codes are upset. In these instances of isolation, the heartbeat comments on the atrocities of the experiments while simultaneously linking us in a visceral way to the character's pain. The layers of complexity are purposefully challenging. The results decenter the listener into realizing that not only are there multiple time frames, there are multiple narrative perspectives at work on all levels of the sound track

FIGURE 3.3. *La Jetée* (1961). The heartbeat that underscores the time-travel experiments shifts in status from a subjective effect to a commentary on the condition of the prisoner.

from the sound effects to the narration to the music. Similar shifts in the status of sound are taken up in Hollywood films of this period, as the previous examination of film music reveals. The sound montages in *THX 1138* borrow this concept but transform the heartbeat into a tone, which is used for "mindlocks" by the state-run "controllers." These effects, like their French New Wave counterparts, punctuate the perils of state control of technology as they underscore the dangers of allowing the state to literally reach into the human mind, locking it off choices and ideas.

ALPHAVILLE

Another influential story of technocracy with an equally influential aesthetic style is Jean-Luc Godard's *Alphaville*, which was shot on location in "present-day" Paris, but as was the case with *THX 1138*, this familiar locale doubles for a futuristic political and intellectual dystopia. Stylistically, the film combines elements of noir and the science fiction genre, making it an important precursor to Ridley Scott's 1982 *Blade Runner*. Similarly, *THX 1138* draws heavily from *Alphaville*'s editing and sound

patterns, and, as a result, the films are in dialogue with one another in terms of their formal construction. The narrative of *Alphaville* follows an American private eye/assassin Lemmy Caution working under the alias Ivan Johnson (played by Eddy Constantine) into a futuristic city where he must kill a scientist who has been conducting mind-control experiments. The city is controlled and monitored by a supercomputer called Alpha 60, which, not surprisingly, deconstructs history and memories to maintain its position of power. The sentient computer is the self-proclaimed "logical means of destruction" of the past, present, and undoubtedly the future. What is most intriguing and challenging about this film's audio style is the almost independent nature of the sound track from the image track. Sounds and images constantly move off on their own to reveal different locations or perspectives on the action. The approach is at times jarring and challenges traditional image-sound relations of synchronization and unity. Throughout the film, for example, Godard employs the sound of a computer beep, which he often places over dialogue exchanges. Early on in the film, Johnson walks in a hallway with Natasha Vonbraun (played by Anna Karina), the daughter of one of the missing state scientists, and he asks her about love. As she restates the question in befuddlement, we hear the close perspective recording of a computer beep. Such beeps recur throughout the film, and their placement implies that Alpha 60 is constantly monitoring all activities from somewhere in the city, separate but connected. Supporting this idea are repeated cutaways to a brightly lit office building, which presumably houses the Alpha 60 supercomputer. The shot functions much like the cutaways to HAL's beaming red eye in *2001: A Space Odyssey* signifying an omniscient and controlling presence. A more contemporary example might be found in *The Matrix*, which presents an entire city that is a virtual construct of sentience, surveillance, and control. In *Alphaville*, the references to the Alpha 60 are splintered across the image and sound track, forcing us to constantly reevaluate the position, meaning, and status of these idiosyncratic placements. With each beep, we must constantly imagine the computer off screen, observing, controlling, and strategizing.

The separation of the image and sound tracks is clearly taken up in *THX 1138*. According to Murch,

> The closest I can get to describing the sound track for *THX 1138* is to say that it was "another film" running alongside the film that you were looking at. It had its own internal logic. Sometimes it came into unity with the film, then it would split off, and return again.[11]

THX 1138 strongly evokes the formal play of Godard's films—even similar computer beeps are employed in *THX 1138* to imply that there is a constant level of eavesdropping occurring by the state controllers.

The influences from the voice track of *Alphaville* transfer to *THX 1138* as well. Godard seems fascinated by the use of the voice throughout *Alphaville*. Peter Wollen notes that, in general, "Godard is obsessed with problems of true speech, lying speech and theatrical speech."[12] Just as Godard uses sound to reveal multiple story environments, he uses the voice to reveal multiple narrative perspectives. *Alphaville* includes a layered pattern of voice-overs from Ivan Johnson and the Alpha 60. Ivan's voice-over closely recalls the voice-overs from Hollywood noir cinema of the 1940s, because it includes fragments of his analysis and inner thoughts. He notes, "The ideal, here in Alphaville, is a technocracy like that of termites and ants." He is a man of insight, yet his choice of metaphors belies his hard-boiled mentality. Conversely, the voice-over by the Alpha 60 is less traditional in application and style. In the opening of the film, the Alpha 60 notes, "Sometimes reality is too complex for oral communication. But legend embodies it in a form which enables it to spread all over the world." Effectively, myth is more powerful than reality. This is a clever analysis of the power and impact of cinema itself. Particularly innovative about the voice of Alpha 60 is its texture and structure. It is a found montage comprised of gurgles, gasps, whistles, and croaking enunciation, which were produced in composite form by an actor with a larynx tube.[13]

The found effect complements the mise-en-scène of the film, which manipulates present-day objects and settings to evoke a possible future. This design approach was used in part out of budgetary constraints but also to offer audiences perceptual anchors in the present, so they can speculate about the future. In *THX 1138*, the filmmakers take up this idea of the found future, using construction sites in the San Francisco area for sets and gathering sounds from real sources, rather than generating them electronically with synthesizers or computers. The filmmakers even employed the effect of the textured voice in the recording of robot police officers, but refined the voices not through medical technology but through a process of re-recording using variations in tape speed and a postproduction mixing process called "flanging," which is achieved by placing two identical sounds significantly out of synchronization to create a mechanized effect. Similar experiments with the voice are found in *The Conversation*, but, instead of compositing voices to build a montage, the layers of complexity are stripped away from the recording by sound detective Harry Caul to reveal the true nature of the words: "He'd kill *us* if

FIGURE 3.4. *Alphaville* (1965). The voice of the Alpha 60, the supercomputer that monitors *Alphaville* and tries to thwart the investigation of Detective Lemmy Caution, is a found montage of gurgles, gasps, and croaking enunciations.

he got the chance." In both *Alphaville* and *THX 1138*, though, the robotic voices foster a dual reading. They maintain their authority within the hierarchy of sound because they present important dialogue, but the voices are also mediated by technology, making them suspect as constructions. This duality activates the anxiety present in many science fiction films (*2001: A Space Odyssey*, *Star Wars* and *Terminator*) related to perils of mixing of man and machine.

FAHRENHEIT 451

François Truffaut's *Fahrenheit 451* presents a far more conservative use of style than *La Jetée* or *Alphaville*, but the film uses the voice in a particularly innovative way to challenge traditional image-sound relations. Rather than open with written credits for the title sequence, the crew positions and names are presented in spoken form. As with *THX 1138*, the credit sequence reveals hidden meaning. By engaging this approach, the director reminds us that we are participating in a construction—both

cinematic and linguistic. The expectation for a written credit sequence is denied. We must listen and remember. It is important to note that the juxtaposition emphasizes the voice over the imagery. The sequence is jarring, yet it also serves a thematic purpose in the genre context. What if written language were banned in the future? Burned in the future? This opening title sequence echoes the end of the film in which books are recited as a means of preserving history and cultural memory. The impact of this stylistic approach is to challenge filmgoers to examine the interrelations between text and technology rather than allow them to fall into the pleasure of narrative suture. In this way, these sequences are emblematic of the aims of the French New Wave movement in general.

The innovative and often decentering stylistic techniques of the French New Wave challenged filmmakers such as Lucas and Murch to rethink Hollywood cinema within genre contexts. As a result, science fiction films like *THX 1138* combined various editing and recording techniques to create sonic metaphors and motifs that defied traditional codes of "naturalism" and recalibrated perceptions about filmmaking and the future. According to Murch,

> Your perception of this strange world comes from the sound it makes. The more unusual and evocative those sounds are, the more you have a sense of being in a strange place. One of the subtexts of the movie that guided us . . . was that we wanted a film from the future, rather than a film about the future.[14]

Sound would no longer simply accompany the image. Rather, it would challenge it for primacy. In this respect, the convergence of stylistic and genre experimentation by New Hollywood filmmakers was as revolutionary as the French New Wave movement. Both groups accomplished a reevaluation of film form and for a time challenged filmgoers to reexamine the political, social, and ideological factors that informed cinema itself.

BEYOND STYLE: SOUND PRODUCTION PRACTICES AND NEW TECHNOLOGY

Godard said, "Hollywood no longer exists in the same way, but it re-exists in another way."[15] He may have well been talking about the film sound track. Sound montage was not simply a movement based on stylistic appropriation or selective borrowing. Instead, it became one of changing technologies and production methods that transformed the exhibition

and reception of the Hollywood sound track. Unlike their French counterparts, the new generation of Hollywood filmmakers were technophiles anxious to upgrade aging sound technologies and adept at rethinking traditional techniques or innovating entirely new production processes for their films. As a result, the films of this period saw the introduction of multitrack recording, portable technologies, and new re-recording and ADR (Automated Dialogue Replacement) technologies, which led to unprecedented refinements in cinema sound. The effectiveness and implications of these advancements can only be understood in relation to the past. For this reason, it is important to set the old Hollywood and the new Hollywood in relief, when examining the shift from sound to sound montage (and sound design).

Much like the French New Wave, the new generation of American filmmakers was constantly aware of their relation to the past cinematic output of the Hollywood film industry, simultaneously drawing and diverging from it. The designation "sound" within the classical mode of Hollywood production has traditionally encompassed everything from recording actors on the set to remixing the final composite tracks of a film. The multifaceted processes of sound, which were handled by production recordists, sound editors, and re-recording mixers, were consolidated to this single concept, and the credit of "sound" on a film was often granted solely to a studio's sound department administrative director, which is ironic when one considers the strict hierarchy of labor distinctions.[16]

In a classical Hollywood studio production, the mixing and editorial aspects of film sound were controlled by a rigid division of duties and were also limited by the audio equipment available. The sound department head was the primary coordinator of a film's sound track and was conversant in the technical aspects of sound as well as the aesthetic ones. The supervisor oversaw the completion of a film's sound track. In general, the sound department head would spot the film (sometimes with the director, though often not), identifying key sound needs, and listen to sound material pulled by an assistant from the studio sound library. Effects tended to be discrete and specific. Examples of effects might include door slams, chin socks, or car horns. Dense use of multilayered sound effects was often discouraged, because of the potential for noise build-up on the recording format as well as generational loss that would occur when sounds were overdubbed or layered. Noise reduction technology invented and implemented in the 1960s and 1970s reduced some of these concerns for New Hollywood filmmakers, and these limitations have been completely overcome today with digital recording and

editing systems, which do not accumulate any noise artifacts. The ability to layer sound effects is one of the key differences between old Hollywood sound and New Hollywood sound design.

When library selections were agreed upon for a classical Hollywood film, the sounds were transferred to optical film and separated into categories. Sound kits would be assembled with the necessary sound elements for a particular reel and dispersed to the re-recording editors, who were, according to union classifications, "responsible for editing, assembling and synchronizing the various sound tracks [typically categorized as dialogue, music, and effects] developed for a motion picture, in order to combine these tracks into a single record."[17] Editing was performed much like a laboratory process, with attentiveness to fidelity, synchronization, and unity, which were considered the standards of professionalism for the designation "sound."

Because re-recording editors were considered part of the editorial department, they were generally not permitted to mix their own sounds. Again, Murch's approach to sound montage was a reaction to this restriction. Tracks were constructed by individual reel (preventing an overview of the entire sound layout), and, when complete, the tracks were strung up in the dubbing stage for mixing, which would be overseen by the re-recording supervisor or head of postproduction. Typically, contract directors did not sit in on the final mix of a film. Studio economics often dictated that they would be working on their next directorial assignment. There were directors such as Orson Wells and Alfred Hitchcock, who were very conscious of sound use within their films, but their status, backgrounds, and independent positions (often as producers) gave them considerable latitude to experiment with film form in general.

As a result of these methodical processes of construction, the composite nature of a particular sound effect was often not heard until the final mix. Sound effects could not be measured in relation to dialogue or music elements until this point in the process. So, if a sound effect clashed with the music in terms of tempo or frequency or perhaps challenged the primacy of the dialogue, it was eliminated or replaced by a sound editor (assigned to be on standby during the mix). In general, sound effects adhered to the aesthetic "naturalism" supported by the classical Hollywood narrative system, and sound placements or techniques that stood apart from this system were considered out of place or unprofessional. By contrast, jarring effects and idiosyncratic editorial tactics for picture and sound were the norm for early New Hollywood films, solidifying their connection to the art cinema movement.

The mix process for classical Hollywood films was also greatly limited by the dubbing technology that was available. Mixers could not stop or start the dubbing of a particular reel when they wanted. Rather, the re-recording of a reel was performed in a single pass, start to finish. If a mistake was made, the sound supervisor had to decide whether the mistake was significant enough to mandate another pass. This decision would mean using hundreds of additional feet of optical film, which was not reusable. These technical and economic limitations prevented the refinement of film sound in general.

Re-recording experimentation was possible and encouraged on specific genre films. Just after the introduction of sound, the RKO film *King Kong* (1933) was one of the first films to use experimental re-recording, specifically employing animal sounds such as lion roars and gorilla screeches played backward and laid over one another to create the roar of Kong. Gathering and creating original sound effects, however, was difficult, if not impossible. Recording experimentation in the field was limited greatly by the cumbersome equipment. Typically, the equipment necessary for sound recording was substantial, including trucks, batteries, generators, and optical sound recorders. Traditionally, sound effects sets (collections) were created on the stage and kept in the departmental library. Experiments in overdubbing were possible by use of techniques borrowed from radio productions. Multiple turntables, for instance, were used to play recorded effects simultaneously to create new composite effects. In addition, various preconstructed sound effects devices were used to simulate effects from wind gusts to door closes. According to studio era sound supervisor James G. Stewart (*Citizen Kane*), however,

> In the early days, re-recording was a process you indulged in only if it was absolutely necessary. The release track on most pictures was 80 to 90 percent unaltered original sound.[18]

Conversely, in an era of independent Hollywood productions, producers could rent or purchase portable film sound technology and alter the original recordings in a variety of ways. Francis Ford Coppola, for instance, purchased European flatbeds and dubbing systems for his new American Zoetrope Studios in San Francisco.[19] Subsequently, postproduction became less uniform than it had been in the studio era. The production history of *THX 1138* reflects this new approach. With postproduction far removed from studio oversight, boundaries blurred. Lucas edited the footage for *THX 1138* for more than five months, while Murch cut the

sound montages and assisted with the final mix. It was a "hands-on" approach carried over from their film school days, when crewmembers freely moved between production positions. For *THX 1138*, picture and sound were cut simultaneously to promote "a maximum cross-over influence of sound and visuals."[20] Consequently, the postproduction process became a site of vigorous experimentation.

Part of the postproduction revolution that was being fostered in the San Francisco Bay area was also informed by recording technology. The Nagra tape recorder replaced the large sound trucks of the studio era and allowed for creative capture of sound effects in any location, and multitrack tape players allowed ease of manipulation of raw effects. Re-recording was vigorously encouraged and demanded by sound-conscious producers and directors, such as Coppola and Lucas. For *THX 1138*, sound construction became imperative, because the production did not have access to a studio sound library. The production publicity for the film even emphasizes this fact: "Instead of pulling a sound from a library, Murch searched out the proper noises or engineered them himself, thus customizing the sounds and noises of a future, highly technological era."[21] Murch developed the sounds of the jet cars, the robotic police, and the medical machinery entirely from "scratch." In doing so, he used multitrack recording technology to experiment with tape speed, vary microphone to subject distances when recording, and experiment with distortion thresholds of the magnetic medium in conjunction with the Nagra tape recorder. For the jet cars specifically, he recorded screams to the point of distortion.

According to Murch,

> I turned the record button all the way up so it was distorting in the original recording. When you distort something that loud, there's a low-frequency pulsing as well as a high element. . . . Then I added Doppler shifting on top of the track of distorted screaming to make it seem like it's coming toward and away from you. The Tie Fighter sound in *Star Wars* was done in a very similar way.[22]

Re-recording and manipulation of these effects was also aided by the introduction of the "rock and roll" transport system and start-stop capabilities on sound re-recording dubbers and controlled on the mixing panels. The system allowed previous takes to be listened to backward and forward as a means of rechecking sound levels and refining the mix flow. As a result of this technology, entire reels of sound no longer needed to

FIGURE 3.5. *THX 1138* (1971) Copyright © 1970 Warner Bros. Inc. The sounds of the jet cars in *THX 1138* are screams recorded to the point of distortion.

be mixed in a single pass of recording. Instead, multiple passes and a stop-and-start approach were now possible and encouraged, enabling easy experimentation with sound levels, filtering effects, and composite sound effects. Consequently, *THX 1138* featured approximately twenty different layers of sound effects, dialogue, and music.

In general, sound montage grew from a convergence of recording, editing, and re-recording duties made easier by new technologies and fostered by production conditions and genre considerations. The sound montages in *THX 1138* were built on conscious experiments in each of the traditional areas of sound production, blurring their distinctions. For example, the creation of the voices of the mechanized police robots

formulated just this sort of a montage by creating meaning through re-recording processes. Initially, the actors' voices were recorded "dry," or without filtration, and in close perspective for clarity and to establish codes of authority and intimacy. Murch points out that they spoke "very much the way you'd expect an over-solicitous funeral director to talk."[23] However, instead of processing the voices in the final mix, Murch cleverly "worldized" these recordings.[24] He explains,

> We had one Nagra tape recorder with the clean voices on it. We ham-radioed them into the universe, received them back again as if they were coming from another country, fiddling with the tuning so that we could get that wonderful "sideband" quality to the voices. Then we rerecorded them on another Nagra and cut them into the final sound track.[25]

Adding another layer to this process, Murch played with speed variations on the recorder, extending and shortening words or passages of dialogue in slow or fast motion. The final effects were cut with other elements into the final sound track. Thematically, the voices of the robotic police offered a simulacrum of humanity on an auditory level and punctuated the subversion of human identity and authority given over to technology. These audio constructions exemplify the fluid nature of the processes of recording, editing, and re-recording that Murch and the director were embracing. This approach represents a true unification of text and technology. It functions like cyberpunk for the ear.

CONCLUSIONS

Like the process of editing itself, the movement of sound montage brought together two disparate cinematic factors—the technological traditions and processes of Hollywood cinema sound craft with the idiosyncratic stylistic experiments of the French New Wave and worldwide art cinema movement. The results fostered highly innovative and telling image-sound constructions as well as new reading strategies for filmgoers. New perspectives and perceptions arose, mediated within an equally vibrant science fiction context. Although these experiments varied in terms of their success, the attempt exposed possibilities not just for the creation of alternative worlds but also for the creation of alternative cinematic expressions, particularly in the field of sound. From the fragments of the past and the influences of the present, the sounds of the future were now audible.

4

Suggestive Fragments in *THX 1138*

IN AN INTERVIEW ABOUT THE SOUND for *THX 1138*, Walter Murch characterized the ambience recordings used for the "White Limbo" sequences in this way: "It's basically the room tone from the Exploratorium in San Francisco. . . . It's a veil of mysterious sound—it doesn't have anything specific to it, but it is full of suggestive fragments."[1] The description could easily be used to categorize the entire sound track for the film. The sound montages are full of "suggestive fragments" that offer subtle cinematic metaphors, sharp social criticism, and even satire in the tradition of George Orwell's *1984* and Aldous Huxley's *Brave New World*. The film comments harshly on consumer culture and the dangers of state and religious control of technology. The image-sound relations evoke key science fiction themes of oppression and repression. In the film, individuality is threatened by the enforced use of tranquilizing drugs, the fusion of religion, politics, and consumerism, and a culture of ever-present surveillance. In this environment, the mind itself becomes a cage. The main character of THX (Robert Duvall), however, embraces the edict of the counter culture: "Turn on, tune in, and drop out." He turns on to his own individuality and sexuality with the help of his mate LUH (Maggie McOmie), tunes in to his dire predicament, and drops out by escaping from the underground world in which he is trapped.

Although these messages are informed by the period in which *THX 1138* was produced, the importance of the film for this study lies in its use of film form. The sound montages in the original theatrical release of *THX 1138* aggressively challenge the traditional Hollywood image-sound model, which emphasizes codes of "realism," naturalism, and effacement. Rather than allowing sound to be an appendage to the image, the filmmakers asserted the position of sound as an equal partner in the process

of cinema, much in the style of the films by Godard, moving the sound with, against and sometimes without regard for the image track. In this respect, the film is as revolutionary as *2001: A Space Odyssey* in raising questions and challenging perceptions. *THX 1138*, however, substituted music with *musique concrète* to attain its goal. While *THX 1138* was not as culturally influential as *2001*—in fact, the film failed to reach much of an audience at all—it was highly influential in Hollywood sound circles.[2] The film's innovative experiments and conceptual uses of sound laid the groundwork for the sound effects and designs of the subsequent George Lucas films including the *Star Wars* series and the *Raiders of the Lost Ark* series. In addition, the stylistic techniques that Murch innovated for *THX 1138* would carry over to a number of films by Francis Ford Coppola, including *The Conversation*, *The Godfather* series, and *Apocalypse Now*. In this respect, *THX 1138* was full of "suggestive fragments" that challenged not only filmgoers but also filmmakers to transform the medium of film sound and bring Hollywood cinema closer to the model of sound design.

FRAGMENTED FUTURES

Just as an overture introduces a musical score through the consolidation of themes and motifs, the opening sequence of a film often foreshadows the themes and motifs of its narrative. *THX 1138* follows this concept by offering a rapid succession of images and sounds of intrusion, violence, and sedation that are expanded on throughout the film and ultimately linked to the film's speculations related to the oppression of individuality. An extended analysis of this opening montage provides insights into these considerations that converge on the film's sound track.

Before the film begins, a trailer for a Buck Roger's serial (*Tragedy on Saturn*) precedes the credit sequence. The voice-over positions us within a different era and emphasizes the notion of Buck and his humanity: "There is nothing supernatural or mystic about Buck. He's just an ordinary, normal human being, who keeps his wits about him." This description serves as a telling juxtaposition to the character of THX and his predicament of entrapment in a world slowly being stripped of its humanity. Moreover, the juxtaposition of these two speculative mythologies reveals the extent to which the science fiction genre has been reconfigured between these eras. Stylistically, the two films could not be further apart—the earlier serial reflects the classical Hollywood approach to mise-en-scène and blocking, whereas *THX 1138* presents a style that centers on audio and

visual fragmentation. In terms of sound, one film tells the story, while the other reveals its ideas through film form.

Following the credits, a computerized numeral 5 appears accompanied by rhythmic computer beeps, as if a computer program has been activated and is recording the events. A similar montage occurs in Godard's *Alphaville*. The history of the effect can be traced to the beeps used in ADR (automated dialogue replacement). For this process, sound editors cut in audible beeps leading into the scene that requires dialogue replacement. The signals serve as a timing cue for actors to replace their dialogue in synchronization with the projected image. The reference is obscure but reveals a connection between this media intrusion in the future and the media manipulation of the present. On the image track, the rephotographed image of THX appears, revealing him through the fuzz of a camera hidden in a medicine cabinet in his bathroom. A mechanized voice, recorded in close perspective, asks, "What's wrong?" The voice is placating and positive in the way a product spokesman might sound, and thus, the vocal performance accentuates the connection to consumer culture and marketing. THX expresses a need for something "stronger." Different forms of sedation from video screens to mind-altering drugs are key methods of control in this society, just as they are in *Fahrenheit 451*. The character's imprisonment then is self-medicated and self-regulated.

Computer printouts cascade through data, reinforcing the notion that a system has been activated and is monitoring the events. Another figure, LUH, briefly checks the cabinet then retreats with a curt "never mind." Her voice spins off into auditory evaluation as her words are flanged and processed. It is as if the stress patterns of her voice are under investigation. Later, we discover that she has, in fact, been changing the sedation balance of her "mate" so that he may express love and thus regain his humanity.

Foreshadowing what is to come, however, the image of a blood-streaked and beaten man follows. We later learn this is THX, a perpetrator of "drug-related violations" and "sexual perversion," according to a government prosecutor. The displacement of the image crystallizes the fact that the narrative is deconstructing itself much in the tenor of a French New Wave film. In counterpoint to the image, a mechanical voice asks THX, "Can you feel this? . . . Are you now, or have you ever been? Move slowly." The tranquil tone of the robotic voice presents a disturbing contrast to the violent imagery, signaling the oppressive environment we have entered. History and memory are being questioned, especially in relation to love and intimacy. It is here that "love is the ultimate crime."[3]

Technology mediates the presentation of all of these images and sounds, filtering them through video cameras and audio processors. Every bit of data is under review and scrutiny, not just by a centralized authority but also by the system of oppression in which the characters are trapped. No individual takes up the role of antagonist, rather the film presents the cumulative effects of intrusive technology and misguided authority and social rules. At this point of convergence, individual rights erode. The filmgoer is also implicated in the process of analysis. Just as with the French New Wave narratives, the film demands an active reading strategy to synthesize the narrative data and evaluate these images and sounds of the future. The hope is that the filmgoer will also speculate about the possibilities of this sort of oppression in contemporary society. Lucas explains, "We have all the potentials today [for this course toward the future], polluted air to drive you underground, tranquilizing drugs and computers. Whether it happens depends on the human spirit. Or the lack of it."[4]

As the sequence continues, the social and technical mechanisms of observation and oppression are revealed more clearly in the editorial equivalent of a pull back. The images become less processed, though the sounds remain heavily manipulated as a subtle reminder of the notion of eavesdropping. The allusion to "Big Brother" in Orwell's *1984* cannot be missed. A central control node is revealed, exposing controllers, banks of monitors, and computerized consoles, much like a television studio. Thematically, the setting reiterates the connection to modern media practices, while the screens and sound bites underscore a connection to consumer culture. In a cutaway, a chrome police officer holds the hand of a child as they wait for an elevator. The music accompanying the scene is canned and hollow, akin to something shoppers might hear in a mall. To achieve this effect, Murch played "dry" recordings of the music in the empty hallway then re-recorded it to merge its echoes and spatial cues, using his technique of "worldizing."[5] The result is the audio equivalent of fluorescent lighting, dulling humanity and emotion in this controlled subterranean environment. Thematically, the images and sounds reveal that this society has reverted to infancy by a dependency on mechanization and technology. Throughout the film, the lines of control between humanity and technology are in constant tension for dominance. The plight of THX places him at the center of this struggle. He is the resistant child.

In the control node, two controllers, LUH and SEN (played by Donald Pleasance), scan their screens and listen, videotaping and recording relevant data. These are the watchers and the watched. As we have seen,

they too are being taped and recorded through their sedation cabinets. On the banks of monitors, a visual record is made of the hand of a fetus. Reprocessed voices chatter, "We killed it." Audiovisual reports are made and reported to the Department of Visual Flow. The fragmentation of the human body matches the fragmentation of the human voice on the sound track. Disembodied voices weave together not in expressive communication, but in a mode solely consisting of information and data gathering. Other audiovisual clips deal somewhat ironically with dissatisfied workers/consumers, illegal sexual activity, and a child playing with a sedation cabinet. The controllers dispense prerecorded messages, but the effects are often satiric. The voices were provided by San Francisco radio personalities Terry McGovern and Scott Beach, who become the pitchmen for this new social order.[6] The intertextual connections to contemporary media resonate in terms of consumerism and media manipulation. In a rare show of emotion, LUH watches with pained longing the young child at play, alone, no parents or guides. In this underground world, procreation is forbidden and strictly controlled within labs. The idea strips away connections to family unity, history, and memory. In fact, during the course of the film LUH's identity is recycled and her designation given to her child, which was conceived as a result of her unlawful union with THX.

Finally, the sequence returns to THX as he works in a construction area, manipulating nuclear material in the assembly of the chrome police officers. His position reveals that he is, in some ways, responsible for his own oppression. An explosion occurs in another "cell," and, as alarms sound, a frenzy of voices tally losses. The sound montage is a spectacle of cacophony, yet the heavily sedated THX remains on-line. Through headset links, controllers direct his activities. The construction of the montage of voices with multilayered clicks, beeps, and reprocessed dialogue offers strong intertextual references to the space race, government institutions, and television, perhaps as a means of commenting on the web of anxieties we face in the modern world.

The historical context of the film's production is telling in this respect. In *Terminal Identity*, Scott Bukatman notes that, between the launch of Sputnik and Apollo, "The state took direct responsibility for technological development, in America and other industrial countries, leading to a centralized belief in the 'utopian notion that man could truly invent his own future.'"[7] But was this progress to come at the cost of individuality? That was the tension that emerged and remains with us in many science fiction narratives. The montage of sounds in *THX 1138* taps into these fears and specifically references the NASA telecasts of the 1969 moonwalk as

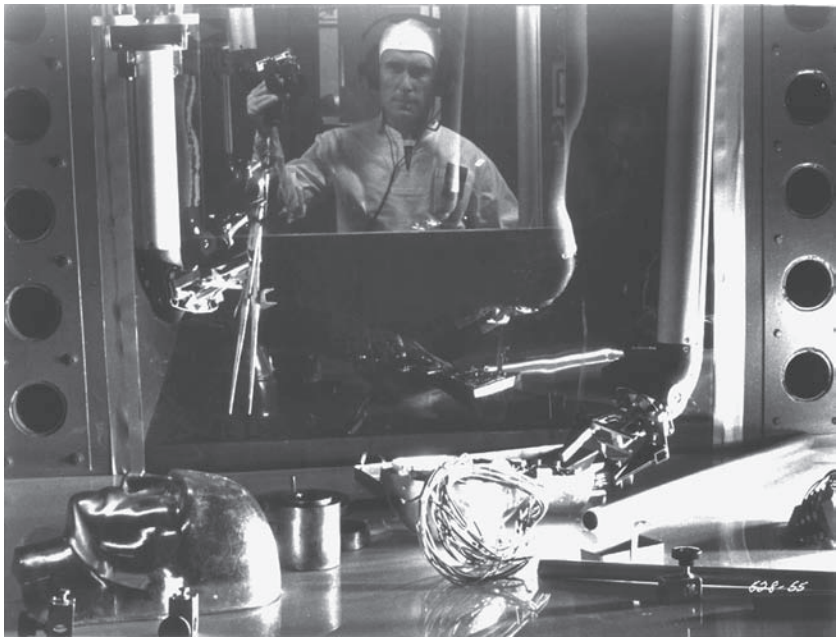

FIGURE 4.1. *THX 1138* (1971) Copyright © 1970 Warner Bros. Inc. Evoking references to the space program, a montage of controller's voices—layered with clicks, beeps, and reprocessed dialogue—direct THX as he manipulates hazardous materials.

well as the Apollo launches. The NASA broadcasts featured recordings in close microphone perspective of astronauts and their ground crews. The signals were compressed because of the restrictions of bandwidth on the radio channels, beeps presumably served as time markers, and the overall quality suffered because of side banding from static and interference in the transmission process. All of these elements signaled the live nature (and verisimilitude) of these telecasts and are emulated to exacting standards throughout *THX 1138*. In terms of reception, the employment of these tactics provides sonic anchors to familiar broadcast practices and coverage, while simultaneously thrusting listeners into the future by applying them idiosyncratically within this displaced and speculative environment. The effects then demand an examination of governmental and technological intervention into our lives in the present to extrapolate about possible outcomes and pitfalls of this convergence in the future. As an advertisement for *THX 1138* notes, "The future is here."[8]

The dense mesh of sound montages presented in this opening sequence

immerses filmgoers within the futuristic environment immediately and without positioning. According to Murch, the concept was to find the future through the sound design and bring it back, without alteration or explanation.[9] The approach demands an altered reading strategy on the part of filmgoers that is specific to film form, in particular the sound track. In this opening sequence, sedation and satire pervade the image-sound constructions, from the canned music to the confused masses waiting for elevators that never come. As with a musical motif, these two factors echo and overlap throughout the film to create a formal unity of composition. Supporting this concept is an equal overlap of narrative elements to draw out speculative critiques. In particular, traditionally separate institutions unite to enact policies and procedures which erode personal freedoms as they relate to sexuality, thought, speech, and religion.

UNITY OF CHURCH AND STATE

Religion and the state converge in the subsequent sound montages as a form of sedation, information gathering, and placation for THX and the population of this subterranean society. Early in the film, THX goes to a confessional phone booth, where he speaks to the computer-processed spiritual leader OMM. The phonetic pronunciation of the name is a reference to both meditation techniques and electricity, if pronounced "Ohm." The name and the character present a clever convergence of spirituality and technology. OMM's encouragements are prerecorded: "My time is yours." The phrase represents a variant of the religious greeting used by Christ with his disciples, "Peace be with you." Yet another variant is used in *Star Wars,* "May the Force be with you." The soothing male voice is recorded in close perspective to the microphone, accentuating the codes of authority and intimacy. The vocal quality encourages trust, as well as obedience to the state. It also serves as an intertextual reference to the talking computers in *2001: A Space Odyssey* and *Alphaville*. Vivian Sobchack notes that the voices in *THX 1138* engage in "rhetoric unattached to human bodies" and that rhetoric is the "outcome of a culture dependent upon media for the interpretation and containment of experience."[10] Authority resides not in the individual voice, but in the sound bites from the reproduction of a synthesized and processed voice distributed to the masses. This attack on media is prevalent throughout the film on both the visual and audio tracks. Ironically, Lucas and his fellow contemporary American filmmakers would be primary contributors to this trend in the decades to follow the release of this film.

FIGURE 4.2. *THX 1138* (1971) Copyright © 1970 Warner Bros. Inc. Spiritual leader OMM dispenses prerecorded encouragements.

In his confession, THX struggles with his emotions and inexplicable sexual urges for his roommate LUH. He implicates his "mate" by noting that she has "been acting strange." OMM offers encouragement and platitudes, yet a deeper intervention is occurring. In addition to dispensing wisdom, OMM surreptitiously records the session. Satirically, the image cuts to a tiny lizard amid the wires and data relays. The image can be viewed as a hopeful sign that nothing can be completely contained in this world, except possibly information. THX's voice becomes data as the sound recordings change perspective and time-stamped chirps are added. As with the voices in *Alphaville*, another location is revealed. The confessional is not just a religious ritual; rather it serves to monitor social behavior and productivity. THX, then, is both a confessor of sins and an informant to the state.

As with a religious confession suggesting Catholic ritual orthodoxy, OMM concludes with a blessing that encourages the cycle of production and obedience:

> Blessings of the state, blessing of the masses. Created in the image of man, by the masses, for the masses. Let us be thankful we have an occupation to fill. Work hard, increase production, prevent accidents, and be happy.

Just as in Orwell's *1984*, Big Brother is watching and listening. He urges everyone to work, submit, and obey. Sexuality is not part of the state-run corporate-religious strategy. The idea is a speculation on the extended influence of organized religion and the government on personal rights. The fear lies in a totalitarian alliance between religion, corporations, and the government mediated by technology, specifically the technology of sound. In this environment, the stirrings of individual identity and sexual longing that THX is experiencing are "crimes against the state."

MUSIC AND SEXUALITY

In contrast to *2001: A Space Odyssey*, *THX 1138* employs music in a more intimate spectacle of image and sound. When LUH breaks THX's sedation cycle, a sexual liaison between the two characters emerges, revealing their humanity, individuality, and desire. In these sequences, the visual track uses a series of dissolves between the shots of the two lovers rather than direct cuts, offering a sharp contrast to the analytical montage style in other sequences. The sound track unifies the images by privileging the character's breathing and the musical underscoring, provided by the woodwind orchestrations of composer Lalo Schifrin (*Cool Hand Luke*, *Bullitt*). The music flows from, rather than drives, the sequence, providing a deliberate contrast to the rhythmic based score throughout the rest of the film. As sound spectacle, it draws us in rather than pushes us away and thus provides one of the more emotionally moving movements of the film. In the tones of the woodwinds, the flow accentuates the discovery of intimacy, love, and humanity and represents one of the few erotic sequences in Lucas' body of work. Unfortunately, sexual intimacy in this world is equated with "sexual perversion" or a sickness, demanding constant scrutiny and exposure. In a speculative twist, this heterosexual predicament for LUH and THX was the equivalent of the homosexual predicament in society during the period in which the film was produced. In both instances, sexuality is viewed as disruptive to civilization and society. In *THX 1138*, the state responds in equal measure to the "condition" with drugs, mind control, and violence. Subsequently, the music of flow

transforms into a pounding drive destined to rehabilitate and reform. The orchestrations become ominous and oppressive throughout the subsequent imprisonment and later pursuit of THX.

THE BROKEN MAN-MACHINE

After nearly destroying his work cell in a nuclear mishap, THX is prosecuted for "drug evasion" and "sexual perversion." The imbalance in his sedation and his sexual liaison with LUH are exposed, and, in the subsequent trial, the government prosecutor aggressively argues for "immediate destruction." The verdict is reduced, however, to "incurable" and detention is sanctioned. THX's sexual expression with LUH has transgressed the barrier of sexuality and made him a criminal. After the trial, THX 1138 is confined to the detention center, where he is confronted by three chrome police officers, the same type of robots he had helped construct for the state to maintain obedience and order. In this sequence, the layers of the sound montage reveal a building metaphor of attempted rehabilitation through interrogation and violence.

With a laser baton, the chrome police officers prod THX and ask, "Are you now or have you ever been?" The reference recalls the McCarthy hearings of the 1950s, seeking testimony of communist activities. THX is also considered a traitor to the state for his foray into human sexuality. The music track features the ticking and pounding of metallic instruments and drums, revealing the sonic motif of mechanical intervention. Layered over this, the robotic voices segment THX's body for areas to be shocked or "adjusted." THX runs in a smaller and smaller circle as he is batted between the robots. Effectively, he is treated as if he were a broken machine being pounded back into shape, fixed through pain.

Thematically, this underscores the fear of technology pervading the film as humans are forced to adapt to machines, and not the other way around. Punctuating this process of "rehabilitation," the composite sound of the laser baton rises and then snaps with clarity as it makes contact. This effect reveals a composite montage of elements and a play on microphone pickup patterns. Over the duration of the effect, the electronic hum begins outside of the microphone's pickup pattern, and then centers itself within the pattern for the completion of the effect, which is analogous to an image coming into sharp focus. Subsequently, the hum seems to rise and is sweetened with an electronic snap when it touches THX. This integrated sound montage features an attention to sound depth, movement, and microphone technology and mimics the visual elements

FIGURE 4.3. *THX 1138* (1971) Copyright © 1970 Warner Bros. Inc. THX becomes the broken machine that must be pounded back into shape.

to reveal a highly refined cinematic spectacle of oppression. In the end, THX reverts to a fetal position, a motif that recurs throughout the film, most significantly when his child LUH is discovered. Children are also featured in the end of the film, propelled up an escalator, like products on a factory assembly line. The commentary on society is bleak and dystopic, as humanity becomes a commodity and conformity becomes the norm.

MIND AND BODY TAMPERING

A sound montage and counterpoint of manipulation and control is also evident in the equally effective detention scene. In the White Limbo containment area, two bureaucratic controllers, whom we never see, hack into THX's mind. Their voices are juxtaposed with the images of THX being shocked and manipulated by a brain implant. Image and sound are competing forms of representation within the scene yet overlap in their connection to pain and oppression. In the scene, the voice of one controller

instructs the other in the use of the mind-control "board." The shifts in the images and sound are analogous to those offered by a television-control board (which edits and mixes sound), and the processed images, which jump in size and scale, support this analogy. The training session, though, is not simply about image manipulation. Rather, in an Orwellian twist, it is about the manipulation of a prisoner and his mind.

On the level of sound, the dialogue reveals a training session in incompetence. One of the controllers admonishes the other, "Don't let it go over 4.7." In this haphazard trial-and-error session, the bureaucrats manipulate and shock THX's mind without regard for his wellbeing. His suffering is detached from their duties. Again, the metaphor of the broken machine arises. THX contorts wildly as he is hit by a buzz of brain stimulation. Satire and tragedy intersect in this conflation of disembodied voices and dislocated imagery. The image-sound relations mimic the patterns presented in *Alphaville*. Cleverly, the scene manipulates the filmgoer's perception and knowledge of reading codes. The fact that the voices exist above the image track indicates that they enjoy a privileged status and possess a narrative authority much like a traditional voice-over. The substance of the dialogue and the doltish performances, however, challenge the status of the voice to the point of satire. As a result, the scene becomes a telling commentary on media and its power over viewers, pinpointing transmissions that are sources of pain rather than pleasure.

FRAGMENTS OF DISSENT

The "suggestive fragments," which Murch refers to at the beginning of this chapter, are the ambient sound montages utilized for the White Limbo, where THX and the other prisoners are being held in detention. The sound element is a found effect, offering a sonic equivalent of the stark locales presented in the film. The use of the effect is unnerving. Filmgoers are left craning their ears to hear and distinguish the sounds and voices that are presented. The effect is reminiscent of the whispers used in *La Jetée*. The echoes and reverberations in the White Limbo are full of ticks, echoes and murmurs. Metaphorically, the true horror of the White Limbo is its lifelessness. The sound effects are stripped of recognizable anchors, while the images are stripped of all color and spatial cues. Even the costumes are a bleached white. They are an extreme extension of the white shirts and government uniforms of the NASA space program. The prison environment is minimalist in the cruelest sense of the word, and a telling

metaphor of the society of the subterranean world. Though SEN attempts to rally the prisoners (albeit in a self-aggrandizing manner), their lack of direction leaves them as empty as the space they inhabit. Lucas notes, "I felt that society had drifted to a point where everything was being talked about and nothing was being done."[11] In this respect, *THX 1138* represents the director's most personal and political film.

The character SEN is the most disconnected of all of the characters, despite his knowledge and mastery of the system. Throughout the film, he manipulates computer records to change room assignments, gain access to restricted areas, and alter data. Yet he cannot make sense of or seize on his own chance for freedom. When faced with escape from the subterranean structure at the end of the tramline, he becomes frightened and returns to the city, where he is taken into custody.

As Dale Pollack notes,

> THX demonstrates that problems aren't solved by talking about them—in the White Limbo sequences, the prisoners spend all their time discussing the concept of freedom but never do anything about it. THX achieves freedom by walking into the white infinity; he takes action and accepts the consequences, which can include death.[12]

CUTTING THROUGH THE DATA STREAM

Throughout the film, the layers of sound montage accumulate in a system of overabundant information and data that can be equated with the overpopulation of the subterranean society. When THX, SEN, and the rogue hologram SRT (played by Don Pedro Colley) escape from the White Limbo, they enter a hallway filled with streams of workers. The sound montage is an overwhelming cacophony of urban street bustle.

This is not, however, just the movement of the masses; these people are the industrial process. The fugitives, who are not sedated, are overwhelmed by the noise and process of movement. They twist like rags in the wind. According to Murch, the sound montage is a mixture of sounds including traffic in tunnels, masses of people in a coliseum, and waterfalls. The montage is layered to accentuate both low-frequency and high-frequency patterns, thus filling the full spectral range of the medium. Murch noted that simply using loud sounds was not enough to achieve

FIGURE 4.4. *THX 1138* (1971) Copyright © 1970 Warner Bros. Inc. In the future, humanity has become akin to data, and crowds shift through the hallways of this subterranean society in a cacophony of urban bustle.

the perceptual effect necessary for the scene. To polarize the effect of sound, he layered in another level of intelligible sound to cut through the clutter. He notes,

> I thought, "What if in this hallway full of people there was some kind of weird PA system telling these people what to do, but it was in another language that you couldn't understand—it was just a voice." . . . The result was like a science experiment when you take a cloudy solution and add one drop of mercury and it comes crystal clear.[13]

As a result, the montage created a cacophony of movement, yet also provided the sharp edge of a directing voice to anchor the dramatic and visceral flow. Metaphorically, the scene calls attention to the unceasing data stream of media and commodities and their negative impact on society and individuality. The fear is that we too will become data that is simply

manipulated and channeled. In the end, the three fugitives cut through the data stream and find shelter. THX's search for his mate LUH, however, is bittersweet. In a computer search, THX discovers that LUH is lost, recycled, and replaced (in name, at least) by her own child. Separated from the others, THX escapes alone. Concurrently, the state controllers are tallying the costs incurred for his pursuit.

ESCAPES AND NEW BEGINNINGS

As THX 1138 climbs to the surface, the chrome police officers call after him to return, "We have to go back! You have nowhere to go!" On the sound track, the voices echo in the long escape passageway, evoking nostalgia and uncertainty. The reverberation also serves as a reminder of the distance THX has traversed. His separation from his past and this society is visual, spiritual, and sonic. He rejects the officer's plea to return, and the state (beaten by the individual) ends its tally of costs.

When THX reaches the surface, the setting sun dwarfs him. The image

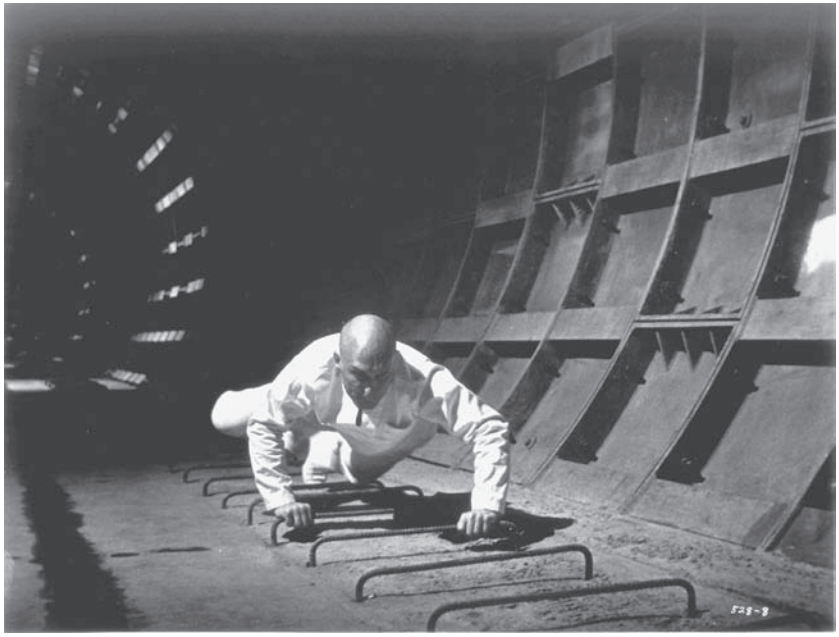

FIGURE 4.5. *THX 1138* (1971) Copyright © 1970 Warner Bros. Inc. "We have to go back! You have no where to go!" THX rejects the echoed pleas to return.

is a sharp contrast to the visually whitewashed graphics that shroud the entirety of the film. The moment, however, is one of resounding uncertainty for the character and for the filmgoers, because it is unclear what awaits THX on the surface or in the future. Only the silhouette of a passing bird across the horizon and the musical score offer any hope.

CONCLUSION

The hope that the film offered in terms of film sound, however, was undeniable. *THX 1138* cost only $750,000 to produce, yet the filmmakers took more than a year to assemble and construct the multilayered sound elements and an additional three weeks to mix the composite effects. In the process, Lucas and Murch refined the image and sound montages far beyond any science fiction offering to date, greatly recalibrating expectations for the genre in terms of graphic design and sound. In this respect, the film exemplified the sound montage movement as it brought together film form and stylistic influences from classical Hollywood and the French New Wave to promote a rethinking of both cinema and society. Although the film never provided the box office returns of Lucas' subsequent films, it stands as the foundation from which all of his subsequent work would seem to be in reaction to or in dialogue with. *Star Wars*, in particular, would adopt many of the sound techniques and tactics developed for *THX 1138*, but would apply them in a more restrained manner within the diegetic spaces of a new universe. In these spaces, sound design would be refined and reconfigured.

Part III

Sound Designing

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5

From Sound Capture to Construction

BUILDING THE LEXICON OF SOUND DESIGNS FOR *STAR WARS*

IN 1975, BEN BURTT WAS GIVEN A YEAR to create the sounds for an entire universe, the *Star Wars* (1977) universe. He notes,

> When I started out, it was very unusual for someone to be employed to make specific sounds for a film . . . Then along came George Lucas, who instructed me, "Here, take this microphone and Nagra, take a year and go out and collect all the interesting sounds you can think of."[1]

This "innovative plan" reshaped the lexicon of Hollywood film sound and positioned Burtt as one of the top sound designers in contemporary cinema. In the era of the "New Hollywood" blockbuster, which began in the mid-1970s with the release of *Jaws* (1975), the experimental movement of "sound montage" segued to a model of "sound design." The lessons that the New Hollywood directors learned from the French New Wave and European art cinema did not fall into the service of a personal cinema, as many critics had hoped, but rather into a "new" cinema that focused on high concept narratives, genre experimentation, special effects, and spectacle.

Star Wars provided a paradigm for this blockbuster cinema that persists today. Partly a product of timing, the film arrived at a historically important moment to a domestic market that had recently experienced gas shortages, a recession, and economic downturns in various industries, including the film industry. As a result, audiences were seeking the kind of escapism that *Star Wars* and other blockbuster films would provide. Economically, the film served the corporate interests of the entertainment industry by presenting a model for "event movie" blockbusters,

which included not just film exhibition but also ancillary merchandising, cross-media promotion in magazines, on radio, and on television, and the reestablishment and reconceptualization of the serial/franchise template borrowed from classical Hollywood serials like *Buck Rogers*. The narrative of the film tapped into the history of Hollywood genres as well, borrowing elements from the Western (desert landscapes, albeit on a distant planet, and cowboy characters like Han Solo), the war film (combat sequences that replace aircraft with spaceships), and historical/religious epics (spiritual/mythic plot devices and expansive vistas). *Star Wars* and other films like it established the importance of pastiche in both style and narrative content as a strategy for structuring the blockbuster. Also important, the film changed the science fiction genre. Partly because of the box office failure of *THX 1138*, Lucas shifted his approach to the genre away from the influences of the avant-garde and the dystopian tradition to a mainstream commercial aesthetic and traditions based in myth and romanticism. Simultaneously, he linked science fiction and spectacle—both visual and sonic. Throughout *Star Wars*, he provided an "abundance" and "intensity" of audio-visual content, and, according to Geoff King in "Spectacle, Narrative and the Blockbuster," this type of spectacle provides filmgoers with pleasures that evoke a sense of "grandeur," "awe," and "the sublime" as well as an experience outside the "typical reality of everyday life."[2] These were not simply spectacle effects for awe and show, however; rather, they were integrated into the film and became part of the narrative dynamics, which in turn demanded a shift in reading protocols.

As the New Hollywood filmmakers embraced this notion of the blockbuster, the drive toward formal experimentation as a means of perceptual confrontation and consciousness expansion fell away. Fragmentation of the image and sound tracks that had been so much a part of films such as *THX 1138* gave way to a more commercial style that emphasized a new kind of image-sound unification, anthropomorphism, and spectacle. And, although these filmmakers did pay homage to the films and filmmakers of Hollywood's past, they borrowed (some would argue pilfered) heavily from these sources as well. As Christian Metz points out, however, it would be a mistake to "scorn" or dismiss these works as irrelevant or simply derivative.[3] These films were part of an unexpected cinematic revolution in terms of style, technique, and technology that continues today.

"Sound design" became part of that revolution. While Walter Murch initially conceived the term to describe the way he "hung" sound in the

theatrical environment, its range of meanings expanded as it was taken up by other sound artists and by the popular press.[4] Sound design also came to represent the design of specific sound effects (laser blasts and rumbling spacecraft), which were often achieved through innovative recording and editing techniques. Finally, sound design was also applied as a blanket term to describe the design of the overall sound track or its conceptual framework. Also important, one of the unifying factors in the expanding definition was the attention devoted to space, both cinematic and theatrical. The connection to the tropes of the science fiction genre is evident—space intersects with iconography, locale, and thematic concerns of the genre. In the process of constructing the sound track, specific sound designs often elaborate upon or play with spatial considerations. By doing so, the sound effects gain an authenticity in relation to the image and establish emotional resonance as they relay narrative information and anchor audiences in the story world. Concurrently, new multichannel technology allowed filmmakers to strategically deploy these sounds within the theatrical exhibition space to create new types of spectacle and sensations. It is not surprising that this multifaceted model of sound design is best exemplified by and often mediated by a genre that is about the exploration and definition of constructed spaces, the science fiction genre. For this reason, *Star Wars* emerged as a pivotal film that exemplified and solidified the means and model of sound design.

This section on "sound designing" explores the construction of sound effects in the science fiction genre and their deployment within the theatrical exhibition space. In this chapter, I examine the methods by which sound is designed and underscore the need to evaluate sound effects not simply in terms of capture achieved through the recording process but as constructions, which are in fact mediated by recording technology and aesthetic choices. Using key examples from *Star Wars*, I specifically address the issues of sound perspective, image-sound relations, and the history of the Hollywood codes of "realism," which function as a means of creating credibility and authenticity within a genre context. In the accompanying chapter, rather than present the specific case study of a film, I deal with sound and space as mediated by developments in multichannel technology, specifically Dolby Stereo and its relation to the science fiction genre. This analysis details the ability of multichannel developments in conjunction with genre codes and conventions to expand the cinematic diegesis or the story universe and foster new forms of cinematic spectacle, offering new directions in both sound design and science fiction.

PROBLEMS IN THE CAPTURE, CONSTRUCTION, AND DECONSTRUCTION OF FILM SOUND

One of the key problems in traditional sound theory has been that it often examines film sound as a single composite object of capture or copying that can be reproduced in an exacting one-to-one correspondence with the original sound when it is exhibited in the motion picture theater. Béla Balázs, for instance, argues, "There is no difference in dimension and reality between the original sound and the recorded and reproduced sound as there is between real objects and photographic images."[5] Others such as André Bazin and Jean-Louis Baudry make similar statements or extol the dangers of "realistic" sound simply as a form of mimicry. In short, the recording becomes the sound, and it is a single sound that is unaffected by the intervention of the recording process or mode of production. Ironically, this notion persists even in our popular understanding of film sound today. Many film reviewers still do not understand or simply neglect the highly constructed nature of film sound. According to Alan Williams, however, "To define sound as a thing 'in itself' requires the omission of the material circumstances of production and reception of the sound."[6] In "Reading, Writing, and Representing Sound," James Lastra argues for the development of "a theory of representation [of film sound] which does not insist on a loss of being between original and copy, a theory which does not seek to define the referential effects of each and every representation by comparison with some logically unattainable idea, and a theory which avoids falling into any naïve sense of equivalency between 'original' and representation."[7] In addition, Rick Altman, Mary Ann Doane, and Michel Chion have expressed the need to deconstruct the film sound track aggressively and avoid the notion of "realism" altogether. It may, however, be best simply to qualify the term "realism" as "cinematic realism," which is governed not by our expectations and perceptions of the "real world" but rather by our expectations and perceptions of cinematic worlds.

In contemporary Hollywood cinema, production considerations for film sound construction are as intricate as they are vast, ranging from microphone positioning, which can infuse a recording with codes of intimacy or isolation, to re-recording, which can focus or emphasize a sound through filtering and volume manipulation. These factors are important because they provide the architecture for sculpting a sound. Referring just to the process of collecting sound elements, Tomlinson Holman points out,

> The mechanics of recording are . . . profoundly affected by the choice of microphone and its corresponding microphone polar pattern, the placement of the microphone and above all, what is recorded.[8]

In some cases, the limitations of microphone polar patterns have even been used to match sound to picture. In creating the sound effects of the light sabers for *Star Wars*, Ben Burtt first recorded the raw sound of a stalled electrical motor ("Grrrrrr"). He then added the sound of a television power supply for high frequency sweetening ("Hummm"). However, to encode the recording with a spatial component, Burtt replayed these sounds at half-speed through an amplifier to a speaker and re-recorded them using a shotgun microphone, which he wielded like a sword at various angles in front of the speaker. Because this microphone had a lobed pickup pattern—meaning it was highly directional in its focus—the re-recorded sound floated on and off axis, offering the shimmering oscillations and electronic "whooshes" of the Jedi light saber.

The layers of sound construction then can occur at the most fundamental level of the recording process, so it must be noted that even the most ordinary or "realistic" sound tracks must be considered constructions rather than simple capture (because of the layers of mediation created from "proper" recording techniques, as well as from the recording technology like the microphone). John Belton argues,

> The sound track does not duplicate the world set before it; it realizes an imaginary world, endowing the space and objects within the story space another dimension that complements their temporal and spatial existence as *representations*.[9]

Film sound must be analyzed from this starting point. Just as images are examined through close textual analysis and within historical and technical frameworks, the sound track must be also examined with a heightened attentiveness to these critical perspectives.

In the science fiction genre, it is at times both easier and more difficult to examine sound effects as constructions, because our perceptions and expectations get in the way. In *Star Wars*, the visuals of the film present spaces, landscapes, and creatures that give the appearance of a filmic "reality" that is credible and authentic. In truth, though, the huge ships traveling through the universe are actually miniature models rephotographed

with motion control cameras against animated star fields, and the unusual creatures in the film are actors fitted with carefully constructed prosthetic makeup appliances. These elements are meticulously constructed by using advanced special effects technologies and makeup techniques that encourage a sense of verisimilitude and foster a suspension of disbelief. The sound track is equally as constructed through innovative editing and re-recording techniques to gain authenticity, yet it too is highly theatrical, emphasizing the abstract concepts of faraway locales, creatures, and vessels. For example, in the *Star Wars* universe, the sound of a broken motel air conditioner was slowed down considerably to become the rumble of the Imperial ship in the opening shot of the film. Although the material means of production are difficult to determine, the credibility of the image and sound relation is fostered by both perceptual and cinematic cues. The lower the frequency of a sound, the larger the perceived size of the object making that sound. Think of a thunderstorm or, in this case, a passing ship. Cinematically, the sound design also cues a long tradition of sound effects associated with maritime films. Ships in these films cut the waves, moving in and out of frame as their hulls creak and groan under the strain of movement. The difficulty in examining these image-sound constructions is the powerful ability of the film medium to create unity through synchronization and other techniques. Aptly, Murch argues, "A film has its own authority that seems to deny the fact that anyone was involved in it or made it happen."[10]

Genre conventions play a key role in this project of self-effacement, but, again, there is a balance to be struck. In the science fiction genre, an informal contract is established between film and filmgoers to reinforce the unity and authenticity of the representation. It is a tenuous and unspoken contract regarding generic expectations and suspension of disbelief. Paradoxically, filmgoers must agree to a "hesitation" in belief between reality and fantasy as entry into the mode of science fiction. Tzvetan Todorov has identified a similar situation in *The Fantastic* but relates it to the experience of the reader who is caught between two explanations:

> There is an uncanny phenomenon which we can explain in two fashions, by types of natural causes and supernatural causes. The possibility of a hesitation between the two creates the fantastic effect.[11]

It is this sense of doubt that Todorov identifies as a means into the mode of the fantastic (for readers).

A similar experience in terms of audio-visual hesitation is what Burtt and other sound designers depend upon when creating a composite sound effect in relation to science fiction imagery. For a sound designer, engaging the science fiction genre is a matter of careful attentiveness to recording and production techniques, spatial concerns, the history of sound effects and genre convention. For these reasons, ghosts continue to moan, thunderstorms whip and wrap around us, and computers go on crunching data in audible whistles and chirps. Sound and image construction is often a balance between an established representation and abstraction.

When this balance is achieved, the process of hesitation becomes naturalized, but it can be broken when a rupture or break occurs. A rupture can occur when a sound effect is too literal in relation to the image or context. The sound of a contemporary car engine placed in synchronization with the image of a futuristic vehicle would be immediately rejected as being contrary to genre expectations. Alternatively, it might be designated as parody. The strength of an image and sound construction, then, is not simply a matter of synchronization. Rather, it is one of stylistic sensibilities within the genre framework as well. So, whereas the sound designer packs each sound construction with meaning, we must endeavor to unpack and examine them with the same attentiveness. In fact, in a much broader sense, the science fiction genre encourages image-sound investigation as part of the generic "play" and subsequent pleasure of the genre. Knowledge of the illusion and its manufacture are connected to a sense of mastery, which is one of the key pleasures for this new generation of filmgoers.

A central feature of the blockbuster tradition has been fan group participation through the meticulous examination of cinematic manufacture of popular films, from special effects to star personas. The vast numbers of magazines, fanzines, and Internet sites devoted to the production, consumption, and analysis of popular cinema demonstrate this activity. These alternative forums and venues expand the universe of a film beyond the boundaries of the theater and thus expand narrative enunciation and cultural importance, often through intertextual references and play. *Star Wars* and its sequels and prequels have fostered a massive industry of revealing its "behind-the-scenes" processes through DVDs, CD ROMS, books, web-based documentaries, and fan groups. The series has also inspired imitators and countless parodies such as *Hardware Wars* (1977), *Spaceballs* (1987), and *George Lucas in Love* (1999). Alternate versions of films in the series (*The Phantom Cut*, which extracts the character of Jar Jar from *Star Wars—The Phantom Menace*) have surfaced as well. In

many ways, the aggressive construction and deconstruction of cinematic texts has inspired a new generation of filmgoers to take a more active role in the production and direction of contemporary media. Film sound, like many other less-explored aspects of cinema, has benefited greatly from this new awareness as it helps to build the vocabulary of cinematic techniques related to special effects and sound design.

CREATING A LEXICON OF SCIENCE FICTION SOUND EFFECTS

In the science fiction films produced during the 1950s and early 1960s, the body of sound effects and music tended to emphasize elements that were electronic, mechanical, and ethereal. These effects came to sonically represent future technologies and environments and the unknown. Through the use of the Theremin, the line between music and sound effects blurred. This unique instrument used magnetic fields to generate oscillating tones (as performers passed their hands over the surface of the device), and the music it produced became associated with otherworldly technologies, tapping into the audience's fears of the alien and other. Thematically, the use of the Theremin underscored a general move by classic science fiction films to conflate art and science, in this instance music and electricity. In *The Day the Earth Stood Still* (1951), Theremin-based sounds can be heard as the guardian robot opens and closes his destructive visor. In 1996, the sound track for Tim Burton's *Mars Attacks!* used the Theremin for the dual purpose of both homage and parody. In general, the convergence of electricity and music/sound pointed toward the future and technical innovation with uncertainty, skepticism, and fear—themes that became genre conventions. It is this sensibility and the emphasis on sonic abstractions (for instance, pure tones to designate the hum of a futuristic engine), however, that Lucas and Burtt would react against in the construction of the sound designs for *Star Wars*.

Unlike *THX 1138*, the sounds for *Star Wars* were motivated far more aggressively by the dramatic and emotional concerns of the story. Lucas wanted this future to be recognizable by filmgoers as industrial, functional, and, most important, credible. As a result, the sound track for *Star Wars* is far more conservative in its overall design than *THX 1138*, yet the filmmakers did build upon Murch's experimental work in sound recording and remixing and image-sound refinement. Burtt also incorporated his own sensibilities in the design process and drew on his vast knowledge of the history of sound effects to create the sonic landscapes for the film series.

Lucas required the creation of a sonic environment that embraced a "used future." According to Burtt,

> We wanted an "organic," as opposed to electronic and artificial soundtrack. Since we were going to design a visual world that had rust and dents and dirt, we wanted a sound world which had squeaks and motors that may not be smooth-sounding or quiet. . . . Therefore we wanted to draw upon raw material from the real world.[12]

Burtt collected and constructed a new catalogue of sounds for the film. The idea of using previously recorded sound libraries was rejected to offer the film a new and innovative sound texture. This approach represents an important shift from the classical Hollywood period that was highly dependent on the reusable studio libraries that would reinforce house style. Now, the character of an individual sound track became dependent on a particular artisan, the sound designer, who would build a unique library of sounds for each new film. Films with franchise potential often maintain a sense of continuity by retaining a kind of "house style" for sound by reusing effects from installment to installment of the series; however, this is dependent on the effects being retained by the production company or designer, which is not always assured.

One of the central means by which this new texture was created was through the use of portable recording and mixing technology. Portable sound equipment allowed for unprecedented flexibility, mobility, and experimentation in the recording and gathering process. The lightweight Nagra, in particular, was a durable and reliable recording device "weighing only five kilograms [that] could be relied upon to produce recordings of the same quality as those achieved by the best non-portable studio recorders."[13] With a Stereo Nagra IV-S tape recorder (introduced in the period 1970–1977), Burtt collected the "raw material" from unexpected and often mundane sources.[14] In building the sound design for the film, he began collecting sound effects at zoos, farms, and military installations, and he established categories of effects: weaponry (artillery, bombs, strafing effects), vehicles (aircraft, cars, and military equipment), and animals (birds, bears, dolphins, and whales).[15] These elements would be used to build the unique library of materials for the film, but already the process of sound designing was underway in the recording of these sounds. Specifically, microphone to subject distance played an essential factor as Burtt experimented with different sound staging akin to deep focus photography and blocking. Burtt created the unique sound of the laser

"blaster" in the film by hitting an AM radio transmitter tower guy wire with a hammer and recording the resulting "ping" in a close microphone perspective. These "blaster" sounds pervade the opening sequence of *Star Wars* as the Imperial troopers engage the diplomatic security forces in a brief series of battles, and, through a combination of recording and remixing techniques, these effects are encoded with spatial cues that produce a visceral and unsettling feeling. The sounds of the blasts create two levels of spatial perspective in this sequence. First, the close perspective recordings, which are sweetened with actual gunfire ricochets, encode the blasts with a comic book aesthetic and an emotional intensity that immerses filmgoers in the battle. The blocking and action of the scene

FIGURE 5.1. *Star Wars* (1977)

FIGURE 5.2. *Star Wars* (1977)

FIGURE 5.3. *Star Wars* (1977). The sound effects of laser blasts and footfalls during the opening battle sequence in Star Wars establish the geography of the ship and underscore the mayhem and drama of the assault.

also recall the traditions of classical Hollywood serials. Alternatively, as the scene moves rapidly throughout the corridors, the sound and spatial perspective shifts into a different mode of design vis-à-vis the editing and mix process. Entire exchanges of laser fire are implied off screen through careful editing. The effects are also processed to imply that the sounds have been muffled or dampened by the deck walls. The perspective and sound manipulation constructs a gestalt of the ship's layout from the texture of its surfaces to its spatial breadth. Overall, the sound processing gives the action a sense of continuity, temporality, and depth, while at the same time it maps out and expands the geography of the environment.

As the security forces retreat, the sound track rages with blaster exchanges that are partially visible through portholes deep in the backgrounds of the sets. In these instances, the sounds of the blasters fall away into the distance. The sounds are given this impression by changes in volume, increases in reverberation time and extended microphone-to-subject distance. These sonic and spatial cues help to shape the filmgoers understanding of the constructed geography of the diplomatic ship and underscore the mayhem and drama of the assault.

Such an attentiveness to sound perspective in both recording and remixing is crucial in the sound design process. As Murch explains it,

> My general principle of recording sound is never to think of recording just the sound itself. To record a telephone ring I think of recording the space between myself and the telephone. What I'm

> really recording is a relationship between that telephone and the space around it . . . it's incredibly emotional. The air has a lot to do with it; it's sort of a perfume of sound—sound without air has no smell.[16]

As with the camera lens, the polar patterns of a given microphone help focus, shape, and construct a sound. The pattern acts much like the frameline does for the image, allowing containment or exclusion. Unlike image recording, the sound recording can capture and reiterate spatial cues, such as diffraction and reflections, thus implying spaces outside the frame of collection and deep into its interior. These are the factors that give sound its "smell," according to Murch.

CONSTRUCTING CREDIBILITY

In conjunction with these aspects of sound perspective, designing sound is also a matter of designing its credibility in relation to perceived cinematic reality and the specific imagery presented on the screen. Burtt notes, "The basic thing I do in all of these films [*Star Wars* and its sequels] is to create something that sounds believable to everyone, because it's composed of familiar things that you can't quite recognize immediately."[17] In short, he establishes credibility for an effect by finding anchors in "familiar" sounds (animals or machinery) and linking these to the imagery. Although these sounds are manipulated through electronic means, they are not generated electronically and thus maintain their complex character in terms of dynamic range and texture variation. This type of credibility is drawn from the stylistic approach of creating and using "organic" sounds for the film.

Supplementing this approach is an attention to image and sound credibility, which for the sound designer is a matter of aesthetic sensibility, genre considerations, spatial factors, and image-sound displacement. As previously noted, credibility is tied deeply to the filmgoers' genre expectations and their willingness to allow for a hesitation in belief. In many instances, Burtt approached the task of creating the sound for *Star Wars* in a scientific manner (of which cinematic traditions were a component). With an undergraduate degree in physics, he used this background to inform his aesthetic choices in the design process:

> I took a lot of joy in trying to analyze the equipment and creatures George had created. I wanted to know what powered this or that

> device, what kind of mouth or lungs this or that creature had. Knowing those things was important to conceiving the sound it would make.[18]

For example, the animal noises (bears, seals, and badgers, among others) used for the character of the Wookie were edited and pitch shifted by slowing down the original recordings. In addition, Burtt layered the effects and organized them to establish emotive markers such as grunts to signify particular expressions of concern or despair. Simultaneously, these sounds were matched to the images of actor Peter Mayhew in his mask and costume. The bear vocalizations, in particular, which characteristically resonate from the back of the animal's throat, provided the best match for the prosthetic mask fitted to the actor.[19]

Understanding these physical and acoustic factors were key to creating the right "fit" for the sounds in relation to the imagery. The variations of these sound effects in relation to the character also established

FIGURE 5.4. *Star Wars* (1977) Copyright © 1977 Twentieth Century-Fox Film Corporation. The sound designs for the Wookie featured animal noises from bears, seals, and badgers, creating the dialect and vocalizations to best match the prosthetic mask fitted to actor Peter Mayhew.

an ongoing pattern of unity and authority, providing an emotional and intellectual subtext to the Wookie "language."

Science fiction obviously poses particular problems in terms of sound and image relations in that many of the environments, technologies, or creatures do not exist. The "fit" then must be extrapolated and speculated from the available material, imagery, and diegetic circumstances. But, as Belton argues, cinema sound does not have to conform to reality: "Images attain credibility in the conformation to objective reality; sounds, in their conformation to the image of that reality, to a derivative reconstruction of objective reality."[20] When that "objective reality" is entirely constructed as it is in a science fiction context, the images and the narrative cue the creation of the sounds that accompany them during the production process. In this instance, Burtt closely observed the imagery, the technology, and creature creation within the visual world of *Star Wars* and extrapolated from these elements as a starting point for the accompanying sound designs. This is not to imply that the sound was subservient to the image; rather, the image provided one particular means of organization.

Ironically, in creating these effects, Burtt depended on the power of misperception as well. As a matter of production practice, the recording of a sound such as the growl of a bear would be split from its image in the collection process. (It is the equivalent of an image MOS—With Out Sound—but inverted, MOI—With Out Image, or sound without image.) Sound and referent are separated. The decontextualization of almost any sound generally throws it into the realm of the uncertainty and hesitation for most listeners, except for those with advanced ear training. This inability by audiences to match and identify sounds with their sources creates anxiety and hesitation. It leaves the audiences craning their ears to comprehend exactly what the origin of a sound might be. Sound designers like Burtt depend on these phenomena to create and deploy innovative new sounds. They combine familiar elements to create constructions that are unfamiliar. For the sound effects of the Wookie, the noises are recognized as both familiar (something animal-based) and unfamiliar at the same time (an animal language given the status as dialogue). The familiar textures of sound become subconscious anchors to the recognizable sounds, while the idiosyncratic organization becomes a springboard into the speculative. The balance of credibility in any sound-image construction is therefore tenuous, which is part of the pleasure and draw of the science fiction genre. Audiences are constantly questioning the deceptions that they are hearing and seeing

yet hoping the combination of these elements creates both spectacle and speculation.

ENGAGING GENRE, SPACE, AND SPECTACLE

The complexity of a sound design expands even further as the constructions engage the thematic and generic considerations of a film. The "spotting" of any film to create and place the various sound effects requires a measure of textual analysis and attentiveness to genre by sound personnel and usually the director. In this way, sound selection and creation can be unified and developed over the various reels of the film to build motifs, accentuate themes, and punctuate dramatic passages. In the design process for *Star Wars*, Burtt consciously engaged the film's themes (good versus evil, man versus machine), the iconography (lasers, spacecraft, and communication devices) and the narrative archetypes (good son/evil father) with his sound designs to offer new layers of meaning. In these instances, sound does not simply attempt to just conform to the physics of the diegesis. Rather, it engages the textual and/or emotional dynamics of the narrative. According to Burtt,

> In space fantasy the work becomes much more abstract. Your imagination can take much greater leaps. You are not limited by what people are expecting. Sound in fantasy can function somewhat like music. You can decide what emotional reaction you want to create.[21]

Sound design aspires to the status of music to help structure the drama and evoke different emotions.

One obvious conceptual and textual construction in any science fiction work comes in the representation of outer space and movement through it. Unlike *2001: A Space Odyssey*, though, *Star Wars* does not adhere to the scientific principle of silence within a vacuum. Rather, most of the dogfights, battles, and ship movements are punctuated by a flurry of sound effects from laser blasts and explosions to engine rumbles. The abandonment of scientific principles was an aesthetic decision on the part of Lucas and Burtt to make the film more visceral and emotive.[22] There are genre concerns as well. Their decision was in part an attempt to emulate the style of classic serials, particularly Westerns and science fiction shorts. Much like a Western, the vast, exciting and dangerous space constructed in *Star Wars* represents a new frontier to be contained,

dominated and controlled. Historically, the decision to render this space with sound would color the sound tracks of almost every subsequent science fiction film from *Star Trek—The Motion Picture* (1979) to *The Matrix Revolutions* (2003). It is also a clear example of how systems of sound representation in the genre (and blockbusters in general) are exchanged across films. These approaches become part of the mode of production and representation, just as they would in the classical Hollywood period. The key difference, however, is that these effects are designed for specific spaces and visceral intents.

By rendering sound in the vacuum of space, *Star Wars* aggressively represented outer space as an immersive environment for the audiences to navigate. For instance, a new relation to spectacle emerges as audiences are encouraged to identify with the space pilots in the film, who are constantly repositioning themselves to the challenges such as the destruction of the "Death Star." Ultimately, the sound design allows the filmgoer to ride the film rather than simply view it. This evolution in subjectivity and suture will be covered more fully in the next chapter through an analysis of multichannel sound (surround sound).

SOUND DESIGN AND THEMATIC CONSIDERATIONS

One of the central concerns of the *Star Wars* series has been the interplay between good and evil. In fact, the final installment of the series *Star Wars—Revenge of the Sith* (2005) traces the descent of Anakin Skywalker to "the dark side." The question for this study is how do these films represent such broad themes through sound design? In the creation of the sounds for the various spacecrafts in the original *Star Wars*, Burtt established and provided subconscious cues of difference. According to Burtt,

> The Empire spaceships sounded a certain way as compared to the rebel fleet; that was a deliberate style change. Everybody in the Empire had shrieking, howling, ghostlike, frightening sounds. . . . Whereas the rebel forces had more junky-sounding planes and spaceships . . . they tended to pop and sputter more.[23]

The *Millennium Falcon*, in particular, sputters and groans through the film like a car with a dying battery. The glitches associated with the *Millennium Falcon* comically question the reliability of both the ship and its pilot, Han Solo. Solo's commitment to Luke and Leia's ideals is questioned throughout, especially when he tells them, "I'm in it for the

money." Eventually, though, he affirms his status as a reliable hero, when he pilots the *Millennium Falcon* into the Death Star, flying backup for Luke and the rebel alliance. The sounds of the rebel ships, in general, evoke the notion that these craft are less high-tech and more hand-built, like street racers. Conversely, the Imperial ships evoke a reliance on highly tuned technology and are associated with sounds of torture and the paranormal.

In terms of establishing cinematic geography, the rumble of the engines of the various rebel craft permeates the decks of the ships—evoking a sense of size, space, and movement. The accompanying sounds of propulsion mechanisms, computers, and weapons arrays reinforce the diegetic factors of the story world (the work-a-day environment). In contrast, Darth Vader's ship in the Death Star sequence screeches and whines in a far more anthropomorphic manner. By using techniques introduced in the production of *THX 1138,* the ship's noises were similarly achieved through recording human screams to the point of distortion and mixing them with various aircraft effects. The sound design reinforces the notion of technology trapping the human spirit and soul, which is fully realized in the character design of Darth Vader. He represents a merging of flesh and machine. His use of "the force" has somehow been twisted by the mechanisms that sustain him. His ship and its sounds are extensions of this merger, and thus they scream in pain.

The contrast between the two types of craft and their sounds reinforces the narrative themes (good versus evil) and the deeper mythological aspects of the film. Burtt is keenly aware of this binary throughout the film series. He sums up the contrast best in his discussion of the sounds for the light sabers: "Darth Vader's laser sword is pitched in a minor key, whereas Ben Kenobi's is more of a C major chord. When they get together, they don't really harmonize very well—a disharmony."[24] It is from this "disharmony," however, that the dramatic tension of the film emerged, a tension that subsequent blockbuster films would access to reveal the contrasts of good and evil through sound design.

LAYERS IN THE LEXICON: EDITING AND RE-RECORDING

Editing and re-recording are crucial processes used to create the layers of texture and meaning for the *Star Wars* sound track, particularly as they are related to the voice. As previously mentioned, sound design emerged from the blurring of the duties of the recordist, editor, and mixer, as well as the use of new portable technologies. On *Star Wars*, Burtt used

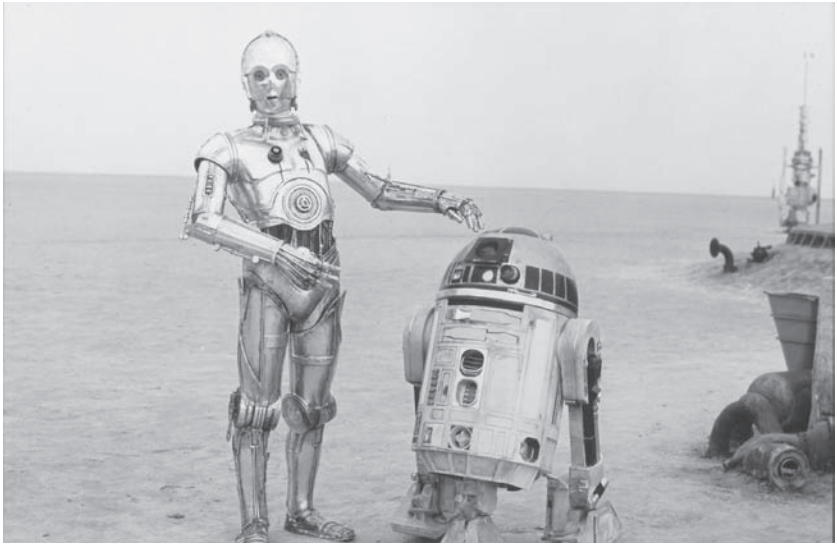

FIGURE 5.5. *Star Wars* (1977) Copyright © 1977 Twentieth Century-Fox Film Corporation. Through editing and re-recording of beeps, chirps, and whistles, the dialogue for R2-D2 was anthropomorphized by sound designer Ben Burtt.

a "TEAC four and two-track decks, a stereo Nagra, some basic outboard gear, and a 35mm mag transport to make his own transfers."[25] He set up the portable technology in his Los Angeles apartment and established a self-contained editing bay and sound studio, which allowed him to manipulate raw material he had captured. Both Burtt and Lucas were fascinated by the use of sound as language and exploited the notion fully in the sound designing process for the film. The dialogue of the character of R2-D2 is the most intriguing in this respect. Through the careful sound editing and re-recording of beeps, whistles, burps, and the like, the character is shaped, humanized, and anthropomorphized.

Burtt also added his own vocalizations to provide more tangible anchors to the cadence of the dialogue. The implication in the editing of these sound effects is that sound becomes akin to spoken language, enunciating narrative points and punctuating narrative events. It reveals an attentiveness to not just the textual level of enunciation but also the emotional level. Through the organization of the sounds, audiences knew when the "droid" was distressed, concerned, fearful, or just being irreverent. In R2-D2's encounter with the Jawas, he is stunned by a laser blast. Bathed in blue electric residue, he screams, jitters, and whines. Key to this

design is attentiveness to rhythm, syncopation, and emotion, which follows the cadence of spoken language as an embedded structure. R2's "dialogue" cues the audience to connect with his injury, yet a comic pratfall on the visual track reveals that he is not too badly hurt. Sound and image relations are in constant dialogue, and, in this respect, the construction is akin to musical counterpoint and punctuation. Like the film score, the sound design cues the audience how to feel and when to laugh.

The process of re-recording adds additional layers of metaphoric enunciation to the sound constructions, while also connecting with the overall generic concerns of the film. For example, the voice of Darth Vader quickly came to epitomize evil in the *Star Wars* universe through the summing of the voice of actor James Earl Jones and the sounds of underwater breathing equipment, a scuba regulator. The composite design has been emulated and parodied in numerous films, including *Spaceballs* (1987) and *George Lucas in Love* (1999). As a work of design, the construction splices sounds of man and machine together to create a monstrous effect. The re-recording process "streams" the two sound elements yet creates a tension between the sound as effect (which is connected with the mechanical) and the voice (which is connected to identity, authority, and narrative enunciation). The question is, Which side will win out? Of Darth Vader, Obi-Wan Kenobi (Alec Guinness) notes, "He's more machine than man now." In the final confrontation between the Emperor, Luke, and Darth Vader in *Return of the Jedi,* however, audiences reach a different conclusion. Anakin Skywalker is redeemed.

Finally, re-recording is used to expand the diegetic geography through the addition of spatial markers such as reverberation and reflections. The footsteps in *Star Wars* are particularly telling in this respect. As the stormtroopers take over the princess' ship in the opening scenes, their footfalls establish the geography and texture of the craft. The clanking sounds reinforce the notion that the characters are walking on metal grates inside a vast, high-tech spacecraft. The set floors, however, were constructed entirely out of wood. All of the footfalls in the film were recreated through careful Foley walking on metal surfaces. The design of these sync hit effects were then edited and re-recorded in relation to the images to create strong signification in terms of the nature of this environment and the fabrication of the ships. The quality of these effects established a new tradition and attentiveness to even the smallest detail of image-sound relations in the Hollywood blockbuster. These factors would be key in establishing the lexicon of sound design in this new era of filmmaking, though the past was far from forgotten.

DESIGNING WITH PAST TRADITIONS

Key to the sound design process is being attentive to past codes and methods of sound construction and capture. This approach fits with the overall style of *Star Wars*, which offers a pastiche of elements borrowed from classical Hollywood genres but has implications for subsequent blockbusters. According to Burtt,

> I think the sound designer has to be aware of how sound has been done historically. Each person who comes into a movie has seen thousands of other movies, and you have to take that into account. That doesn't mean you have to copy, it just means that you have to know [about it]. I think the best education a new artist could have, in any field, is to learn all the way up to where the frontier is, and then take those few steps beyond it.[26]

It is essential, then, to remember there is a historically vested component to any sound design. How sounds were captured, manipulated, and applied in the past often informs how they are created and used in films today. During the classical Hollywood period, sound departments established vast libraries of sound effects. These effects were placed on records and tapes for perusal by sound supervisors and editors then transferred to another medium, such as optical or magnetic film stock for editorial purposes. The sound libraries housed sounds ranging from gunshots to birdcalls. Categories were established and catalogued for easy retrieval. Today, this process continues on digital audio workstations and is assisted by computer databases with the capability of string searches and relational searches as well as instantaneous retrieval and performance of sounds.

Specific Hollywood studios established their house styles based in part on the repeated use of specific sound effects from their libraries. For example, the Warner Bros. studio had a particular set of sounds that included chin socks, gunfire, and tire screeches and became the foundation of effects for their gangster films. As much as the images of these films have become icons in American culture, so too have their sound effects. They are recognizable and in part generate genre expectations.

In borrowing from the past, the layers of intertextual references became part of the New Hollywood's affinity for genre pastiche, whether intended or not. Sound effects from the past directly inform those of the present. For example, the arrow "whizzes" from the Errol Flynn film *The Adventures of Robin Hood* (1938) set the standard for the sound of

weaponry in the adventure film and swashbuckler. Even a more current retelling of the story, Warner Bros. *Robin Hood—Prince of Thieves* (1991), sampled these original sound effects and used them as the foundation of the sweeping arrow slings.[27] The science fiction genre also borrows from past films in terms of using the sounds of chin socks, weaponry, and environmental backgrounds. Traditions and expectations dictate the connection.

The breakup of the Hollywood system fractured the sound processes and sound libraries to some extent. Sound assets (at least those on older recording formats) were sold and/or donated. Others were packaged and sold as consumer or professional recordings for use in radio, television, and film formats. The sound library for Columbia Studios, among others, was donated to the University of Southern California, where it was catalogued by then graduate student Ben Burtt. This process directly contributed to his acute awareness of sound history and pedagogy. He remains one of the most articulate and knowledgeable historians on film sound today: "I became very interested in sound used in old films and the aesthetics of how sound had been used to augment the visual dramas. . . . Just by watching a show and listening for a few moments, I can tell you whether it was Fox or Paramount or Warner Bros."[28]

Burtt would use this knowledge in the organization and creation of the sound effects library for *Star Wars*, offering updated equivalents to sword play and gun battles, which translated into light saber duels and laser blasts. More important, he understood the expected sound codes of image-sound relations, not just for science fiction films but typical Hollywood films as well, which had so influenced audience understandings and expectations regarding sound in Hollywood cinema. In the course of creating the sound designs for *Star Wars*, Burtt would extend and incorporate Hollywood's past output, thus reinforcing the trend in "New Hollywood" narratives to do the same.

CONCLUSIONS

With its release in 1977, *Star Wars* solidified the model of sound designing and demonstrated sound design's symbiotic relationship to the genre of science fiction. The initial film and its subsequent sequels, *The Empire Strikes Back* (1980) and *Return of the Jedi* (1983), recalibrated the standards for film sound in blockbusters both aesthetically and technically. The highly successful series ushered in not just the era of sound design but also the widespread use of multichannel sound, in particular Dolby

Stereo, which is the focus of the next chapter. With this technology, the definition of sound design expands even further to encompass Murch's notion of placing sound in the exhibition space, which ultimately alters notions of cinematic spectacle and generic expectations. The contribution of these changes helped to transform the old Hollywood into the New Hollywood and as many have noted, signified a cinematic revolution. Christian Metz aptly concludes,

> It would be a mistake to scorn . . . the *Star Wars* series and many others of the same genre. . . . [T]hese films testify to an astonishing vitality of visual invention and technological ingenuity, and to a vivacity of spirit in concrete things which is, as many continental people like to forget, a real form of intelligence. . . . Furthermore, those films employ the absolute and permanent exhibition of the signifier: we must therefore believe that they are revolutionary.[29]

6

Surround Sound and Science Fiction

OVER THE PAST FORTY YEARS, sound technology, like special effects technology, has been hard-wired to the science fiction genre. In part, it is a tenet of the genre not only to be about technology but also to *be* its embodiment. Unlike special visual effects, which usually find themselves outdated after several on-screen appearances (e.g., morphing and bladder makeup effects), the introduction of sound technology often recalibrates audience expectations so that the newest advances—whether in the area of noise reduction or digital presentation—immediately become the standard. Sequels and subsequent studio releases rapidly assimilate the new technology, while applying it creatively, conceptually, or simply consistently within the medium. In part, the assimilation is influenced by economic factors as new technology supplants the old, but it is also bound to the science fiction genre itself, a genre that demands a forward reach (in terms of both narrative and technology), a transgression of existing norms and an attentiveness to its own manufacture. More than any other genre, science fiction as a category in cinema permeates its celluloid borders into the process of production and technology to pose new questions concerning the relations between image and sound for the filmgoer.

This chapter explores the reach of contemporary science fiction into the realm of multichannel sound technology, specifically surround sound and the often elusive and neglected sound track material found there. What is revealed is not simply a technology forced to interface with a set of generic conventions, but a symbiosis of the two, each dependent on the other to survive in the cinematic medium and within a larger cultural context. Primarily, economics shaped the relationship between the technology and the genre as the "New Hollywood" science fiction films

were produced and marketed specifically with multichannel sound advances as a point of attraction and spectacle. The tag line "Presented in Dolby Stereo" can be found in any number of film advertisements and posters from the mid-1970s on. Historically, the development and acceptance of multichannel technology coincided with the resurgence of science fiction narratives beginning with *2001: A Space Odyssey* (1968), proceeding through the *Star Wars* series and now into the digital era with new formats such as Dolby Digital, Digital Theater Systems (DTS), and Sony Dynamic Digital Sound (SDDS). Dolby Digital was introduced in 1992 with the release of *Batman Returns.* DTS was developed in affiliation with Universal Studios and was introduced with *Jurassic Park* in 1993. The system features sound-on-disk (reminiscent of the first Warner Bros. sound-on-disk system) linked to the picture via timecode. SDDS is an eight-channel format that arrived in theaters in August 1994. Notable releases in this format include *Johnny Mnemonic* (1995) and *Strange Days* (1995). Science fiction as a genre pulses in this net of electronic crossovers and matrixes. In addition, sound technology and the genre share ideological connections establishing new forms of thematic emphasis and metaphoric constructions in cinema. By adding a spatial component to design, film sound challenged the traditional image sound hierarchy. Finally, the connection between the multichannel technology and science fiction has cultural implications. The symbiosis reconfigured the cinematic experience through aggressively creative and conceptual aesthetic application. The compact layers of the sound track were no longer confined to mono presentation, but rather are deployed as sound fields within the theater environment—left, center, right, and surround. The combination of technology and genre reformulated the film experience into spectacle by offering sonic movement, localization, separation, and new relations between filmgoers and the film's diegesis.

While a multiplicity of formats offer surround sound material, the four-channel Dolby matrix format, which gained widespread use in genre films of the mid-1970s, is the most familiar and serves as the focus of this chapter. Many home audio receivers offer the equivalent of the technology called Dolby Surround using Pro-Logic circuitry, and most videotapes are Dolby Surround encoded as well. Examples of sound track effects within the surround channels include the opening sequence of *Star Wars* (1977) in which a huge space ship swoops in, rumbling and firing lasers, along the z-axis into the depths of space.

Also, the credit sequence of *Superman* (1978) features fly-bys or

FIGURE 6.1. *Star Wars* (1977). In the opening sequence of *Star Wars*, a huge ship swoops in, rumbling and firing lasers, along the z-axis, showcasing the immersive effects of surround sound.

"whooshes" as the various credit lines move outward from the screen, then dramatically, the sound and credit lines shift direction inward as the *Superman* logo appears. (In the 70mm format, the film offered split stereo surrounds.) Currently, the introduction of newer formats (Dolby Digital and DTS) for home use seek to displace Dolby Surround as the standard by offering discrete stereo surround channels as well as a discrete subwoofer channel, thus bringing a 70mm magnetic sound equivalent to the home market.

The theatrical market, however, offered its own challenges in terms of film sound. On May 17, 1965, in London, Ray Dolby founded Dolby Laboratories with the goal of addressing issues of noise and hiss on recorded audiotapes. According to the history presented by John F. Allen in "Dolby: 30 Years of Sound Ideas," the company eventually grew into "an international manufacturing and licensing business with offices in England, the United States as well as Japan."[1] The primary developments by the company include a family of noise reduction processes for consumer electronics and professional mixing and recording technology. More important to cinema, however, was the development of Dolby Stereo, which was introduced in November 1974.[2] According to Dolby Labs, the technology can be defined as

> a highly practical 35 mm stereo optical release print format originally identified as Dolby Stereo. In the space allotted to the conventional mono optical soundtrack are two soundtracks that carry not

> only left and right information as in home stereo sound, but also information for a third center-screen channel and most notably a fourth surround channel for ambient sound and special effects.[3]

The format also offered better fidelity than the other optical systems of that period, as well as an improvement of the signal-to-noise ratio. The producers of *Star Wars* are often credited with ushering Dolby Stereo into widespread use in the domestic theater circuit by requiring that prints of the film be Dolby Stereo encoded. Subsequently, theater owners who wished to book and present the film were required to equip theaters with decoding technology. The box office success of the film, as well as other films such as *Close Encounters of the Third Kind* (1977) and *Superman*, in turn altered both audience expectations and sound aesthetics within the New Hollywood, which was energized by these blockbuster successes. Dolby Stereo became a requirement for various types of genre films, primarily because of sound quality and the multichannel spectacle that it provided. In short, the technology functioned to commodify science fiction films and provide audio content. Ray Dolby offers his own sound bite: "Even with *Star Wars*, the theater owners did not want to spend the money . . . but very slowly they came around."[4] In tandem with the release of successful genre films, Dolby Labs aggressively marketed their product on the basis of economy, sound quality, and "realism." In addition, adjustments were made in the technology so that Dolby 35mm stereo prints were reasonably compatible with mono projection systems so that separate prints did not need to be struck by distributors for different presentation environments. One of the paramount reasons for Dolby Stereo's success appears to be the technology's ability to integrate into the existing mode of film sound production and reproduction, avoiding some of the problems that magnetic technology faced, which John Belton chronicles in "1950's Magnetic Sound: The Frozen Revolution."[5]

As noted, the advertising for Dolby Stereo often emphasized the "realism" of the sound, presumably because it eradicated the difference between sound recording and the actual sound and also delivered sound material around the listener (offering the equivalent of sound patterning in daily life). In "The Voice in the Cinema: The Articulation of Body and Space," Mary Anne Doane argues that the eradication of the "distance perceived between the object and its representation" is a central project of sound technology, specifically Dolby Noise Reduction.[6] Sound technology needs to hide its production or risk destabilizing the "ideology of organic unity" in a film.[7] But can technology ever hide itself and its work

entirely? Despite Dolby Noise Reduction's best attempts to eradicate its work and hiss for that matter, the production of that work is evident in mode of production and film style.[8] For example, mixing practices mediate sound track material through volume changes to avoid overextending the optical medium. Ear training and systematic analysis of sound tracks expose this sound work.

If the argument regarding effacement is extended to include stereo, multichannel presentation subverts the project even further. Although stereo does present sound around the listener (as in real life), it is far from realistic. Sounds that have been placed in the surround channels are formal constructions and highly encoded with recording and presentation methods formulated over time and across media, a topic too extensive to explore here. Science fiction, however, often subverts these codes to expose their constructed nature. The film *12 Monkeys* (1995) presented a scene in which the main character, Cole, found himself trapped in a detention cell while a disembodied voice swirled around him in the surround channels, questioning his sanity. Panning the dialogue of the disembodied voice through the surround channels transgressed a fundamental code of multichannel presentation, which is to place all dialogue in the center speakers. The transgression challenged the code so the audience would engage the spectacle of movement and question the sanity of the character as well as the nature of film sound.

On further analysis, Dolby Stereo surround sound is not meant to heighten realism at all, but just the opposite, to denounce it. Belton notes,

> Stereo film ranged across a variety of genres, from musical (*Oklahoma*!, *Carousel*, *South Pacific*, *West Side Story*) to historical spectacles (*Around the World in 80 Days*, *Spartacus*, *The Alamo*, *Mutiny on the Bounty*, *Lawrence of Arabia*, *Cleopatra*) and biblical epics (*Ben Hur*, *The Big Fisherman*). Through its usage as an element of spectacle and through its identification with the genres of spectacle, stereo sound became associated for audiences not so much with greater realism as with greater artifice.[9]

Stereo formats then have a tradition of accentuating artifice, not realism, and this notion integrates well with the science fiction genre.

From a cultural perspective, the science fiction contract between spectator and film text accepts and encourages the blurring of realism and artifice as convention. This blur in identification then allows speculation

regarding the future with anchors in the present. For example, Arthur C. Clarke notes that "[t]wo-thirds of *2001* is realistic—hardware and technology," and this provides balance and context for the "metaphysical, philosophical, and religious" issues presented within the narrative.[10] When we see a Pan Am logo on the side of a spacecraft or a Hilton sign stenciled on the wall of a set, we are anchored in the present and thrust into the future simultaneously. In terms of sound, narrative and technical methods formulate their own logic and structures to create their own conceptions of the real and the believable in relation to the future. For example, the images of a model of a spacecraft shot with motion control apparatus are fused with the multichannel sounds of low rumbles, which are actually air conditioner noises (manipulated in terms of speed and "sweetened" with overdubbing). This juxtaposition is accepted within the narrative context of *Star Wars*, offering us a future that is constructed out of familiar, though highly manipulated, sound materials.

If, however, the juxtaposition is presented inconsistently or without attention to detail, it represents a breach of understanding, and the work is subject to rejection. Ironically, it is often on the grounds of being "unrealistic." Re-recording artist and mixer Walter Murch notes that, when creating a work of cinematic science fiction, it must be evocative and full of "suggestive fragments" as discussed in the context of *THX 1138*.[11] The science fiction genre then acknowledges artifice as a construction to create speculation, hesitation, and doubt.[12] Science fiction ideology thrives on this artifice and a self-reflexive awareness of it by filmgoers, and multichannel sound technology has contributed significantly to this project in cinema, offering us sonic spectacle that fuses wonder, speculation, and belief.

The resurgence of spectacle filmmaking intersected with science fiction at about the time Ray Dolby began his experiments with multichannel sound and noise reduction. As detailed in the opening chapters of this study, *2001: A Space Odyssey* redefined the cinematic spectacle and posited it within the science fiction genre. Mixing motion control cinematography, metaphysics, and classical music, the film was received as both art and "event" cinema, conflating the notions of narrative and spectacle for the filmgoer. According to director Stanley Kubrick, "I intended the film to be an intensely subjective experience that reaches the viewer at an inner level of consciousness, just as music does; to 'explain' a Beethoven symphony would be to emasculate it by erecting an artificial barrier between conception and appreciation. You're free to speculate as you wish about the philosophical and allegorical meaning of the film."[13]

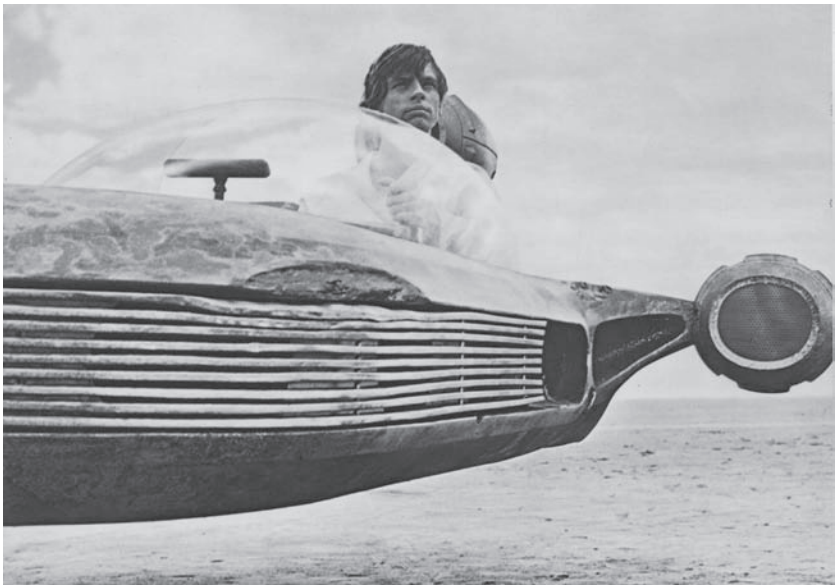

FIGURE 6.2. *Star Wars* (1977) Copyright © 1977 Twentieth Century-Fox Film Corporation. Luke Skywalker's speeder moves from left to right on the screen accompanied by jet sounds to simulate depth and movement.

2001: A Space Odyssey typified spectacle for the "space race" generation, posing questions about humanity's place in the universe through the cinematic medium. The approach and impact of the film deeply affected the sensibilities of the "New Hollywood" filmmakers, and, by the mid-1970s, science fiction emerged as a blockbuster, a franchise and an "A" genre, inheriting fully the status of spectacle in part because of advances in visual effects and equally important advances in stereo, which the new generation of filmmakers demanded.

The introduction of Dolby Stereo and the surround channels offered three specific components to the new science fiction spectacles: the localization of effects, elimination or avoidance of masking, and sonic enhancement through spatial placement. Localization allows sounds to move across the screen. In *Star Wars*, Luke Skywalker's land speeder moves from left to right, panned with a rise and fall simulating depth and movement.

The dynamic nature of the sound's movements accentuates the visceral experience of the event. It is a spectacle of movement and represents a shift in the genre to engage the audiences in new ways. In *Screening*

Spaces, Vivian Sobchack notes that "both playfulness and pleasure are cinematic qualities new to science fiction in the late 1970's and the 80's, replacing the cool, detached, and scientific vision authenticating the fictions of its generic predecessors."[14] The ultimate example of this playfulness is represented in the final sequence of *Close Encounters of the Third Kind*, in which the surround channels carry the sounds of the alien crafts jetting by, the reverberate radio chatter from the government controllers, and the mutual tones of communication and music. The scene places characters and audiences alike into a visual and sonic playpen of fantasy and science fiction.

Another aesthetic advantage is the reduction or elimination of masking. When collapsed to one speaker or headphones, one sound of greater amplitude can cover another sound, creating a condition known as masking. Dolby Stereo offers the option of setting sounds apart in time and space. The low rumbles from a command ship can be placed in the surrounds and not in the center speakers where they might cancel out or overwhelm the mid-range dialogue or other effects. Thus, variations of sound location, density, and volume in the surround channels can punctuate events on screen without the loss of intelligibility that might occur if the entire sound track was limited to the center speakers.

Finally, Dolby Stereo offers sonic enhancement through the added dimension of space. Surround sound envelopes create sound fields in the various quadrants of the theater environment. In the trash compactor scene in *Star Wars*, dialogue plays in the center channel, the beating of the compactor presses in the left and right channels, and the low rumbles of the ship and whines of the press play in the surrounds. Echoes and reverberations of dialogue and effects also play in the surrounds, offering spatial indicators as to the size of the compartment. Concentrating specifically on the surrounds, the formal elements of ambiences are deployed in the theater space to fill in the spatial gaps caused by the limits of the screen. Thus, the reach of the film's diegesis suddenly expands the length of the theater. The reach of the sound material positions the filmgoer within the film's diegesis. Space then is important not only on the screen but also off the screen. The use of surround sound offers a total sonic environment, which masks the real environment of the theater space to create a sonic space with no entry and no exit. Sobchack notes that "postmodern space is 'hyper-real': a representation determined to totalize, stand for, and replace all other space. As Jean Baudrillard identifies it, this 'absolute space' is also the space of 'simulation.'"[15] Sound in these new science fiction spectacles supported this project as a

genre convention, immersing filmgoers within new environments, new worlds.

Ultimately, surround sound technology transforms the theater environment and demands participation by filmgoers, almost akin to an amusement park attraction. Audiences are encouraged to "get into it." Tom Gunning notes how "recent spectacle cinema has reaffirmed its roots in stimulus and carnival rides, in what might be called the Spielberg-Lucas-Coppola cinema of effects."[16] Sobchack goes further, addressing how these spectacles and special effects "rides" have altered the science fiction genre by shifting emphasis away from technological analysis within the narratives to technical expressions on the screen, which come in the form of visual effects: "The genre has transformed its 'objective' representation of a 'high' technology into the 'subjective' symbolization of a technologized 'high.'"[17] This notion was launched by *2001*, a film that dwells on materiality and manufacture more than on traditional linear narrative structures. This shift toward the "high concept" and technologized experience has now pervaded contemporary Hollywood cinema.

The science fiction genre does address this condition, however, through intertextual play. The science fiction genre traditionally encourages the analysis of films as open texts, in which filmgoers can bring their own experience to the films and explore intertextual references between films, sound tracks, video games, and other multimedia forms of entertainment. Subsequently, through a certain amount of play, the narratives gain complexity of enunciation. It is around this intertextual play that fans initiate much of their discourse.

Sound effects, sound montages, and sound placement often present references, parodies, and homage to other science fiction works to create these levels of complexity. For example, a number of critics have noted that, in the final scenes of *Alien* (1979), Lieutenant Ripley's frantic breathing, recorded in closer perspective within a helmet to accentuate the claustrophobic space, can be associated with David Bowman's breathing in *2001: A Space Odyssey* as he disconnects HAL.

Bowman finds himself hypersensitive to the claustrophobic nature of the helmet after his failure to retrieve it earlier in the film. The effects of *Alien* echo *2001: A Space Odyssey* intertextually. In addition, they are both presented in the surround channels offering the filmgoer a sonic point of view, claustrophobic and visceral, which encourages a greater connection between the filmgoer and the protagonists.

On the level of the mode of production, sound designers contribute to this notion of interplay overtly by borrowing, trading, or reusing sound

FIGURE 6.3. *Alien* (1979)

effects. Some of the sounds from *THX 1138* (1971) can be found in *Star Wars* because the films share the same director and some of the same sound personnel. Similarly, the sound sets recorded for a film such as *RoboCop* (1987) appear in a number of science fiction films, including the subsequent sequels. This is partly because of the particular sound production house where the sound tracks are designed and is a matter of house style and economic considerations.

The interrelation of science fiction and surround sound deepens with an exploration of stereo conventions and the formal elements of the sound track, specifically ambiences or backgrounds. Historically, sound tracks within the Hollywood mode of production avoid idiosyncratic sound applications for fear of exposing the constructed nature of the narratives. As an example, dialogue is rarely found in the surround channels for fear of a localization effect, which might draw the spectator's eye off the screen and out of the narrative. Pans off the screen into the surrounds are generally executed quickly with immediate fall-off, while a movement from the surrounds to the screen undoubtedly converges with sounds from the front speakers. Also, sounds in the surrounds are often mixed in the front

speakers as a form of redundancy in case a theater is not equipped with the required sound system or has faulty surrounds.[18]

Although science fiction films adhere to these codes for the most part, they also transgress these norms, seeking to expand their reach both technically and aesthetically. In *2001: A Space Odyssey*, HAL's dialogue and voice spread across all sound channels, including the surrounds. The effect offers no location and every location at once, metaphorically revealing the idea of omnipresence. HAL is not only the voice of the ship, he *is* the ship, and the sound's placement in the theater punctuates the listener's presence within that space. In *Star Wars*, the disembodied voice of Obi-Wan Kenobi settles into the surrounds as well. The voice commands Luke to "use the Force" during his bombing run on the Death Star. The close perspective voice again offers a sonic point of view, placing the listener not only within the spacecraft but also in the position of the pilot. The dialogue and its placement in the surrounds thus play upon the spirituality of the narrative ("the Force"). Suture then is not only in the image (shot/reverse shot); it can be found within dialogue and surround sound technology.

Finally, some of the most prevalent sound effects that reside in the surrounds are atmospheric effects or backgrounds. The science fiction genre, like the horror genre, is highly dependent upon visual effects and sound effects to create mood and meaning. In *Star Wars*, *Close Encounters of the Third Kind*, and *2001: A Space Odyssey*, low rumbles of ships, engine noise

FIGURE 6.4. *2001: A Space Odyssey* (1968). In both *Alien* and *2001: A Space Odyssey*, the surround channels feature the sound of breathing, which accentuates the feeling of claustrophobia for both the characters and filmgoers.

and wind are sound icons, representing the movement forward into the future or the desolation of that future. Sobchack aptly notes, "Natural forces like wind and the sea made alien and threatening by the amplification and isolation of their sound on the track—crashing surf, screaming wind, both become aural icons, metaphors for extreme desolation."[19] Placing these effects in the surrounds further emphasizes these sounds and their impact.

As a genre, science fiction has roots in "utopian" fiction, which often displaced contemporaneous issues and characters into unfamiliar settings to allow analysis and scrutiny. Surround sound mimics this approach and places the filmgoer within a new sonic environment, such as the trash compactor in *Star Wars*. When ambient sound effects are deployed, cognitive geography is offered through echoes, reflections, and reverberations, which create spatial anchors or cues. Spaces, then, can exist without image-based referents. No image is necessary. Ambient sounds such as the low rumbles of the ship or the echo effects of voices or Foley fill in the gaps. The effect is a constant state of hesitation, a constant questioning of "Where am I?"—a question demanded by the science fiction genre on a metaphysical, as well as a pragmatic, level. Surround sound then offers a kind of sonic peripheral vision not provided by the screen directly ahead. The sounds and the narratives strive to locate the listener within the diegesis and sometimes within the minds of the characters in the diegesis, adjoining them with thoughts, speculations, and possibilities. In this respect, the traditional hierarchy of image over sound is shattered. Sound and sounds in the surrounds offer access into areas the image is not willing or is unable to go. In these instances, the sound design has not just achieved an equal status with the image. It has in fact surpassed it.

Part IV

Sound Effects

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7

Genre Splicing

HORROR AND SCIENCE FICTION

IN 1979, RIDLEY SCOTT'S *ALIEN* launched science fiction cinema into the darkest recesses of space with the warning, "In space, no one can hear you scream." The tag line from the now-familiar green and black posters offered a clever fusion of science fiction conventions ("space") and horror effects ("scream"). This linguistic amalgam drew directly from the stylistic framework of the film, which according to the filmmakers was formulated in reaction to George Lucas' earlier space fantasy.[1] Rather than present a genre pastiche, as *Star Wars* (1977) had done, *Alien* bound together elements from two closely related genres—science fiction and horror. These genres collided on nearly every level of the production, from the narrative, which begins as an exploration mission to investigate an acoustical beacon but abruptly turns into a mission of survival, to the production design, which offers renderings of speculative technologies of the future set against primordial, almost dreamlike organic masses. The splicing of these disparate elements initiated a new genre cycle in Hollywood at this time, which expanded the codes, conventions and expectations within science fiction cinema, charging it with a heightened sense of dread and anxiety about the future.[2] This cycle is reminiscent of the horror–science fiction films of the 1950s, which included *The Thing* (1951), *Invasion of the Body Snatchers* (1956), *The Blob* (1958), and *It! Terror from beyond Space* (1958). In fact, *It! Terror from beyond Space* is often recognized as one of the narrative sources for *Alien*, because the films share similar settings and the aliens in both films have a habit of storing victims in the air ducts of the ship.[3]

In terms of sound, the generic exchange transformed the sound track of *Alien* into a kind of sonic organism, which connected deeply with

filmgoers on a conscious and subconscious level. Traditional science fiction sound effects for spacecraft engines, computers, and androids became infused with horrific emotions—dis-ease, shock, and terror. Even the most mundane of sound elements such as wind, footsteps, and body movement (and disembowelment) became charged with new meaning, emphasis, and status. Ultimately, the film's unprecedented sonic constructions offered new image-sound relations as a means of rethinking sound suture and spectacle, which extended the parameters and possibilities of the sound design model.

In this chapter and accompanying case study of *Alien*, I analyze how horror codes and conventions have transformed science fiction cinema and expanded the palette of sound design in contemporary Hollywood cinema. Specifically, I explore how the dark lyricism of horror has settled into the most unsuspecting places of the film sound track, specifically into the elements of ambiences, Foley, and general sound effects. Within the category of ambiences, I examine how music strategies, editing patterns, and geographic cues converge to unify narrative elements and establish hybrid landscapes of horror and science fiction. These factors lead to a form of sonic expressionism. In addition, the elements of Foley are deconstructed in terms of their relationship to identity, "excess," and the body (a critical point of convergence and anxiety within the horror genre), whereas overall sound effects are connected to an examination of anthropomorphism, invisibility, and subjectivity.[4] In this new horror–science fiction context, reading protocols and audience expectations are revised and, ultimately, the reach of sound design is expanded and transformed.

THE DARK LYRICISM OF HORROR AND NARRATIVE DISJUNCTION

Since the release of early sound films such as Alfred Hitchcock's *Blackmail* (1929) and Fritz Lang's *M* (1930), which used Grieg's *Peer Gynt* suite whistled off screen by a child murderer (played by Peter Lorre) to foreshadow his crimes, music (both score and source) has set the stage for cinema's dark excursions into the human psyche. In general, horror films use music and sound effects to establish emotive intensity and impact far more aggressively and conceptually than any other genre, aside from the musical. Film composer Hans Salter, who was responsible for many of Universal's classic horror scores such as *The Wolfman* (1941) and *The Ghost of Frankenstein* (1942), notes,

> In scoring horror pictures, the main element is that of creating atmosphere—the apprehensive mood, which keeps the viewer on the edge of his seat.[5]

Music and sound effects, particularly ambient effects, in horror films present a dark lyricism shaped by the need for a spectacle of intensity or excess, dark emotions, and atmosphere. Orchestrations in minor keys, thunder rumbles and guttural growls can foreshadow a descent into unfamiliar territory or accentuate psychological fracture or weakness within characters. The expressionist results are chilling to filmgoers as the music and sounds of the night rake up and down their spines. The genre contract regarding horror films often stresses visceral impact over narrative causality and unity. Therefore, films are often held together and judged by their ability to sustain tension or provide shock to the filmgoers, which often supersedes the need for narrative causality as the dominant framework for understanding and fulfillment. In short, the horror film is more often meant to frighten rather than enlighten, though some of them have managed to achieve both of these intents.

This pattern of dark lyricism, however, may not have been entirely formulated by purposeful design. As is the case with most classical Hollywood cinema, the styles and narratives of these films were overdetermined by a variety of influences, from economics to genre status within exhibition venues. Horror films were generally considered "B" pictures in terms of their status within the mode of production and distribution. The economic and studio pressures forced producers to create the films inexpensively, quickly, and in higher volume than the more costly "A" features. The narratives and aesthetic style of these horror films were deeply influenced by these factors. Salter notes,

> The Universal horror pictures were a great challenge to me. . . . To be candid about it, a lot of these films were really not that good—the scenes were disjointed, there was little cohesion, and they were not even scary. You had to create the horror with the music, to create the tension that was otherwise not there on the screen.[6]

Horror films should not be characterized entirely by cause-and-effect chains, which are typical of the classical Hollywood narrative model presented by David Bordwell, Janet Staiger, and Kristin Thompson in *The Classical Hollywood Cinema: Film Style and Mode of Production to 1960*.

Rather, horror films are often filled (sometimes intentionally and other times not) with narrative disjunction, character fracture, non-sequiturs and spectacles of excess. According to Rick Altman, these elements indicate "the existence of a competing logic, a second voice [in the classical narrative system]."[7] As a result, music became crucial in establishing narrative intent, drive, and unity. With this elevated status within the genre, a pattern of musical strategies and conventions was firmly established. For example, low tones often established foreboding and psychological tensions, whereas musical stings (or punctuations) were used to create moments of shock or surprise, and anthropomorphic orchestrations took the place of screams or "realistic" effects. These strategies and elements assisted in establishing the overall mood of a film, which many filmgoers consider a unique pleasure of these genre offerings.

From film to film, an exchange of musical methods and conventions occurred within particular studios and between genres. According to Salter,

> A great deal of music was used and reused at Universal in those years. I would use bits and pieces of scores from the library, including my own, and Charlie Previn used to call this process "Salterizing."[8]

Like coding from a genetic sequence, the traits of horror music were passed along, slipping easily between the genres of horror and science fiction. The science fiction films of the 1950s, in particular Howard Hawks' *The Thing* (1951), *Them!* (1954), and *Invasion of the Body Snatchers* (1956), carry the signatures of horror's influence, not just on the level of the sound track but also in terms of narrative themes, iconography, and characterization. Issues of psychological fracture and paranoia, atomic experimentation, and fear of the unknown are shared by both genres. The generic exchange expanded the reach of both genres in terms of their emotional impact and altered expectations. Ultimately, the dark lyricism of horror brought together not just the disjunctive narratives of terror but also the genres of horror and science fiction through formal play. As Tzvetan Todorov aptly notes, "As a rule . . . a genre is always defined in relation to the genres adjacent to it."[9] Historically, this pattern of hybridity is not new. Altman notes, "Hollywood's golden age was a period of intense genre mixing, primarily to increase a film's marketability."[10] The same industrial considerations hold true today. This desire to mix genres stands, however, in contrast to our own critical and cultural tendency to contain genre codes, considerations, and even definitions. The blurring of genre boundaries seems to create a critical uneasiness. According to

Altman, it goes against "the accepted treatment of Hollywood classical narrative as linear, temporally ordered and clearly motivated," a notion that in turn "predisposes viewers to experience films as unified around the familiar structure of a single genre."[11] Yet, genres and their formal elements are fluid, just like music, and it is in this mixing and the process of transgression that genres are renewed.

SOUND DESIGN AND THE NEW SOUNDS OF HORROR

During the new era of sound design, the dark lyricism of horror quickly pervaded the design and construction of the entire sound track and its elements, setting the mood for new kinds of fears. Triggering the exchange in the early 1960s, Hitchcock's *Psycho* (1960) used screeching violins in the infamous shower sequence to mask and mimic the screams of Marion Crane as she was stabbed. Music superseded the place and status of the voice in this instance, speaking to the filmgoer in a visceral and primal way. Subsequently, Hitchcock's *The Birds* (1963) intermingled similar musical screeches with bird screams (created with emerging computer technology), while *The Haunting* (1963) based its narrative tension entirely on musical cues and sound effects to express the psychological fracture of the main protagonist, rather than using ubiquitous flashbacks, clouded lenses, or other special visual effects. Just as the musical patterns and meanings of the classical music in *2001: A Space Odyssey* sparked a transference to the *musique concrète* in *THX 1138*, a similar exchange was occurring in contemporary horror cinema between the music and sound effects tracks. A new cycle that linked horror and sound was about to be unleashed.

Concurrent with the rise in popularity of science fiction films during this period, the era of sound design saw an increased production of horror films, another highly stylized and technically dependent genre. The late 1960s saw the release of *Rosemary's Baby* (1968) and *Night of the Living Dead* (1968), both of which used offscreen sounds from chanting to groans effectively. The 1970s brought the release of such films as *The Exorcist* (1973), *Jaws* (1975), *Carrie* (1976), and *Halloween* (1978). Once again, the film school generation made its mark and entrée into Hollywood through highly stylized and experimental genre offerings. These films contributed not only to the fiscal stability of Hollywood through unprecedented box office income but also heavily informed changes in film sound. In particular, William Friedkin's *The Exorcist* (1973) featured complex sound montages and metaphors that often superseded the images in narrative importance;

Steven Spielberg's *Jaws* carefully interwove music with sound effects to create the ominous presence of a great white shark lurking just beneath the waves, filling in for the mechanical shark that refused to swim and chew on cue; and John Carpenter's *Halloween* set a haunting and unforgettable musical tune to a small-town crisis.

Recalling Salter's criticism of early Universal horror films, contemporary film critics argued that the films of this new period in Hollywood history became "incoherent" as a result of the shift away from traditional literary foundations and narrative causality.[12] As this study argues, however, these genre narratives underwent stylistic and narrative reconfigurations in terms of image and sound relations, which brought to the foreground spectacle and formal play and thus demanded new reading strategies rather than critical rejection. Within the genres of horror and science fiction, the production of meaning was shifting from an emphasis on dialogue to sound effects. Friedkin's *The Exorcist* aptly exemplifies this shift as it uses sound design to create new layers of enunciation through sound metaphor, montage, and motifs. In particular, the opening sequence of the film set in northern Iraq uses sound motifs and metaphor to establish the spiritual conflict in the film as well as to foreshadow its outcome. As the exorcist Father Merrin (played by Max von Sydow) sits in a cafe amid the bustling streets of the city, the ambient sounds from a foundry pound around him like an irregular heartbeat. The motif and rhythm of heart sounds reveals Merrin's human weakness. He has a heart condition, which is confirmed as we see him take nitroglycerin pills.

The sequence begins with objective sound, but rapidly segues into subjective sound. The chanting and music in the sequence offer a rhythmic variation on the heart metaphor and seem to close in on Merrin through a rise in volume levels, a heightening of intensity and shortening in duration of the cutting of the effects. The desert transforms into a claustrophobic space through manipulation of these ambient sounds and music, bearing out Merrin's physical frailty. The subjectivity shift moves the sound from within the diegetic framework into the realm of character psychology and metaphysics as it taps into the notion of the character's fate. It establishes a sense of dread and foreboding. The sound sequence builds to an eerie crescendo moments later inside the study of a fellow archeologist. As Merrin examines relics from the dig, a ticking clock in the room inexplicably stops. Silence. Genre and sound considerations converge as this single sound effect foreshadows Merrin's death from a heart attack at the end of the film. Ironically, it is a moment in which sound spectacle is achieved through silence.[13]

FIGURE 7.1. *The Exorcist* (1973) Copyright © 1973 Warner Bros. Inc. The growls and groans used throughout *The Exorcist* underscore the struggle between man and beast/demon, culminating in the possession of Regan McNeil.

The Iraq sequence in the film ends by punctuating the specific metaphysical conflict between man and the devil. Again, the framework is established through sound and a shift in subjectivity. Merrin goes into the desert, where he faces the statue of the laughing demon. The sound track suddenly fills with the growls and gnashing of two dogs locked in combat. This objective sound transforms suddenly into narrative commentary through re-recording manipulation. The sound is isolated, amplified, and processed with reverberation, thus privileging its status, revealing metaphorically the endless battle between good and evil. This sonic construction echoes throughout the film as a butler fights with a dinner guest in the McNeil home, and more important, when Regan McNeil undergoes her possession and her voice transforms into a hybrid human-devil.

In each case, growls punctuate the sound track, though none is processed in the same way. Taken together, these sounds serve to structure the narrative, accentuating the slippage between man and beast/devil, raising questions of what it means to be human.

On a visceral level, the mixing of these sequences explores sudden

volume level changes, contrasting soft and loud sounds to shock and jar filmgoers. This strategy establishes a pattern of tension and release common to horror films. The "baiting" scene in *Jaws* in which Chief Brody is confronted by the shark for the first time is another contemporaneous example. After a loud hiss and expulsion of water from the shark, the chief backs away from the stern of the boat and breaks the anxiety with the softly spoken line, "We're going to need a bigger boat." In addition, the compilation of ambiences and sound effects used in *The Exorcist* sequence evokes a particular mood—a sense of dread. Bhashkar Sarkar notes, "Sound conveys the inscrutability of the unfamiliar, particularly of places—jungles (crickets, animal howls), deserts (wind, rattlesnakes), old oriental cities (bazaars, middle eastern music)."[14] These excursions into the realm of the unfamiliar test the sanity of characters and audiences alike. For the filmgoer, the experience becomes synonymous with its effect—anxiety, tension, and dread. These are the pleasures and expectations of horror, which as critic James Twitchell aptly notes means "to bristle."[15]

It is in these strategies and the resulting image-sound relations that the unity and coherence of the horror film can be found. As horror writer H. P. Lovecraft notes,

> The ultimate criterion of authenticity (of the fantastic) is not plot structure but the creation of a specific impression. . . . Hence we must judge . . . not so much by the author's intentions, and the mechanisms of the plot, but by the emotional intensity it provokes . . . an emotion of profound fear and terror, the presence of unsuspected worlds and powers.[16]

In cinematic terms, sound design in a film such as *The Exorcist* offers its own "impression" on the conscious and subconscious levels, expanding the pallet of emotional intensity through subtle spectacles of excess and the dark lyricism of horror.

DARK LYRICISM SEEPS INTO THE AMBIENCES OF SCIENCE FICTION

Within a sound track, ambiences generally formulate the background or environmental audio textures for a scene or sequence, playing closely to the images to establish atmosphere and temporal continuity. *The Exorcist* sequence exemplifies this deftly. As a matter of function, ambiences often run across picture cuts, providing unity to the disparate images much

like musical scoring. In typical Hollywood films, ambiences provide the equivalent of a sonic long shot (wind through trees or waves crashing on a beach) then recede in relation to the dialogue, only to return in their original intensity when words are exhausted. In terms of genre considerations, horror films derive layers of emotional intensity and meaning from even the most innocent background ambiences, transforming them into representations of outer *and* inner landscapes. As we have seen, the ambient sounds of a city (sounds of a foundry, villagers praying, and street vendors) in *The Exorcist* turn metaphoric and foreboding through repetition, volume changes, and editing, establishing not only the atmosphere of the location but also a structural and thematic framework that reveals something about the character of Father Merrin. During this same period of filmmaking, the science fiction genre would assimilate these strategies and transform them in relation to the genre's concerns. In part, this was because many of these genre films exchanged not only codes of production but also shared post production houses and personnel.

In horror–science fiction films, the sound of wind in particular takes on apocalyptic dimensions often associated with scientific breakthroughs or technology. The anxiety and dread come when science and technology fail, and ultimately, these associations recalibrated expectations for the science fiction sound track. In the 1973 Michael Crichton film *Westworld*, the wind of the desert rises on the sound track when the theme park starts "going wrong." As two technicians pick up a mechanical snake that has attacked a guest, the isolation of desert wind on the sound track signals a shift from programmed fun to unexpected fear, chaos, and death. The motif of wind recurs to chilling effect when the park's entire population of simulacra undergoes "central mechanism psychosis." In an attempt to shut down the park, the scientists inadvertently cut off their own air supply and suffocate in the control center below ground. It is an ironic twist on the motif of atmospheric sound effects—wind and air—or in this case, the lack of them. At the same time, in the Westworld section of the park, the Gunslinger (played by Yul Brynner) confronts Richard Benjamin and James Brolin. The ambient wind on the sound track unifies the scene as the men face off in the street, and the sound of birds sweetens the track. Unexpectedly, the Gunslinger (donning a cruel smile) kills James Brolin then ruthlessly pursues Benjamin. Like the force of the wind, the Gunslinger is unstoppable, becoming the embodiment of technology gone awry. He is a controlling force, armored and without conscience—thus he represents technology as a means of dehumanization, a primary fear in the modern world.

During this cycle of genre splicing, even the codes of the Western are transformed in this film. No longer does the wind represent the open frontier of the West. Instead, it transforms into an internal fear of the technological frontier. James Cameron's *The Terminator* (1984) ends on a similar note as Sarah Conner, heading to South America, stops at a gas station where she is told, "There's a storm a coming." Looking toward the dark, bellowing clouds on the horizon, she alone knows it is the storm of an impending nuclear war. "I know," she says. These are not simply the sound cues of an impending storm, but the apocalyptic winds of Judgment Day.

The ambient sounds of wind are also connected to the alien or "other," which is often coded as a threat to humanity. In John Carpenter's 1982 version of *The Thing*, the ambient wind first punctuates the isolated nature of the location, drawing a connection to the horror convention of the haunted house in the middle of nowhere. It is in part this isolation that makes the men of the research camp distrustful, agitated, and emotionally insular and thus implicates them in their own destruction. The arrival of the Thing in the form of a sled dog brings with it both the forces of nature (an impending windstorm) and the forces of the supernatural (a being that can assimilate and destroy humanity). Once again, sonic expressionism establishes layered meaning, an external and internal landscape of fear and dread. These considerations are reiterated over and over as the effects are repeated and their volume shifted to create emphasis. In conjunction with the bleached-out images of the snowy landscape, the ambient wind shifts the snow into infinitely mutable configurations, which is equated with the alien's ability to transform into anything it samples or "absorbs." The creature's true horror is unleashed only when the men try to contain it. As Clark places the infected dog in a holding pen, the volume of the wind rises noticeably and takes on anthropomorphic qualities, moaning and screaming. The sound design builds to a cacophony of dog yelps, sounds of liquid oozing, the crunching of bones and pounding wind—until the Thing explodes into a mass of flesh tentacles. The ambient sounds punctuate the notion that this creature cannot be contained and, consequently, humanity is doomed. It is a horror of Armageddon. In "The Imagination of Disaster," Susan Sontag writes, "The accidental awakening of the super-destructive monster who has slept in the earth since prehistory is, often, an obvious metaphor for the Bomb."[17] Although Sontag was specifically writing about the science fiction films of the 1950s, the meaning carries (partly because *The Thing* is a remake of a 1950s film) and can be repurposed to include the devastating forces of contemporary history such as HIV/AIDs or famine.

In contemporary horror–science fiction hybrids, the sounds of waves or water effects are also charged with foreboding and dread as they are isolated and emphasized within the sound design. In the Ken Russell film *Altered States* (1980), Dr. Eddie Jessup (played by William Hurt) uses a water-filled sensory-deprivation tank (and powerful hallucinogenic drugs) to regress genetically. His altered states of consciousness or "mind trips" are rife with disjointed religious, sexual, and abstract imagery, partly in homage to *2001: A Space Odyssey*'s slit-screen sequences and overall narrative concerns. Jessup's breakthrough, however, goes awry as well, and in a swirl of electrically charged water, he nearly converts into primordial ooze. The sound effects and ambiences of his blowout center feature the motif of water in all its variations—crashing waves, bursts of steam, splashing liquid, and the rumble of a swirling vortex. The ambiences—which blur with sound effects—link to the processes of human evolution (fish to mammal), leading Jessup to the cynical realization that the great truth of life is "nothing." This realization serves as an ultimate statement on desolation. Rather than finding comfort in the pools of knowledge from the past, there is only metaphysical longing and loss.

In all of these examples, the sounds of ambiences not only map the diegetic spaces and locations of these horror–science fiction narratives but also traverse the psychological and intellectual terrain of the film's characters and cast doubt on the impending future. As a result the sound design in genre cinema becomes charged with new layers of meanings, and these constructions must be unpacked in relation to narrative themes and visceral aims. In science fiction cinema, the sonic landscapes begin to emphasize a greater uneasiness in relation to technology, scientific breakthroughs, and the future.

FOLEY: BODY HORRORS AND EXCESS

While ambiences explore the terrain of the external and sometimes psychological world of a film, Foley effects move closer to the body in their convergence with horror conventions and codes. Horror films, in general, are considered one of the key body genres in cinema, for both their representations of the body (often in decay) and their stimulation and manipulation of the filmgoer's body. Linda Williams notes that, within body genres such as pornography, melodrama, and horror, "the body of the spectator is caught up in an almost involuntary mimicry of the emotion or sensation of the body on the screen."[18] This perceptual matching

is a crucial factor in the planning, patterns, and impact of Foley sound effects in the era of sound design. In addition, within body genres, issues of identification and transgression emerge in the pursuit of the spectacle of excess as horror creeps into every rustle of clothing, recorded gesture, and footstep. But what exactly is Foley?

The term "Foley" is given to those sound effects that are created in synchronization with the projected image during sound postproduction. Footsteps are the most traditional example of Foley effects, yet in this era of aggressive foreign distribution, Foley work covers almost all aspects of on-screen action, from character movements to armaments. The term attached itself to this process in the 1950s, when sound editor Jack Foley was working on the film *Smuggler's Island* at Universal. Several sequences in the film demanded the sounds of a canoe paddle cutting through a lake, which Foley performed and recorded in synchronization with the projected image to save time in sound effects editing.[19] The results were so effective that the technique quickly became associated with his name. Sound editor Robert Mott explains,

> Jack Foley did not invent this technique. His name simply became identified with it. Prior to this, sounds that needed to be laid down on film were referred to as synchronized effects. At Paramount Pictures, for instance, the term was *make and sync*.[20]

In general, Foley functions to create synchronized effects for narrative actions within the story world, establishing geographical and temporal cues to give the two-dimensional image greater depth and credibility.

Genre films often take a more transgressive approach to the function and application of Foley sound effects. For example, Foley effects have been used to establish tension, anticipation, or fear of the unknown within the mystery genre, a carry over from radio serials. John Belton notes in regards to Foley effects that "their separation from their source can produce suspense" as in the case of the "familiar offscreen footsteps that stalk central characters, such as the helpless L. B. Jeffries trapped in his darkened apartment at the end of Hitchcock's *Rear Window* (1954)."[21] In this instance, the sound of dislocated footsteps has become a sonic icon within the suspense genre.

In horror films specifically, Foley effects tend to punctuate our fears of ourselves, in particular our own bodies. Just as there is an identification established between the physical presence of an actor and his or her voice through the sound track, there is an identification of particular body

sounds with a specific individual, generally correlated by spatial cues, actions, and synchronization. In horror films, the identification often fractures or explodes in spectacles of excess as the body inevitably begins to disintegrate or is disrupted by external forces, natural or supernatural. The filmgoer is often caught in the middle ground between sympathy and revulsion.

Creature films exemplify this reach of Foley sound effects into these body fears. For example, in *An American Werewolf in London* (1981), the protagonist David Kessler (played by David Naughton) transforms into a werewolf in a small London flat, rented by a nurse who has taken him in. While we see the award-winning makeup and bladder effects by artist Rick Baker, the sound track is filled with Foley effects of bones crunching, hair growing, limbs flapping, and joints snapping. The Foley sounds punctuate the character's alienation from his physical body. He tears off his clothes and screams in pain as he undergoes this metamorphosis. In this spectacle of visual and sonic excess, there is also a visceral connection between filmgoers and the character. The image-sound relations get beneath our skin. This scene has caused audiences literally to howl in pain, awe, and ecstasy.

As science fiction and horror undergo generic exchanges during this period in Hollywood cinema, this fixation with the body and body sounds merges with issues of technology and the future. Science fiction centers on issues of identification and transformation within a futuristic context, where bodies are technically enhanced, synthesized, and mechanized. Subsequently, the dark lyricism of horror merges with science fiction concerns to offer a constant questioning of who is human and who is not, and these hybrids encourage filmgoers to explore the implications of this division. Ultimately, these questions lead to anxieties about authenticity and control, which are played out both in the narrative and on the sound track.

In *Westworld*, the Gunslinger embodies and projects these anxieties. In the extended pursuit sequence with Benjamin, the sound track offers the constant, rhythmic click of the Gunslinger's spurs. The sound effect is uniquely layered in its meanings in relation to the various genres at work in the film. It is first a familiar sound element of the Western, connected to horsemanship and the taming of the American frontier. Part of the pursuit in *Westworld* involves a horse chase. The footfalls also generate suspense (a horror staple) as the clicks are displaced from the image of the Gunslinger in the passageways of the underground control center. As the sound levels and perspectives change, we never get a solid fix on the

position of the Gunslinger, which produces fear and terror in Benjamin's character and filmgoers alike.

Finally, in terms of science fiction, these references resonate on a thematic level as well—the sound effect becomes charged with a sense of dread about the future, particularly related to robotic technology. Very early in the narrative, the Gunslinger is revealed to be a simulacrum. His faceplate is removed as his inner mechanisms are repaired and upgraded. As a result, he unexpectedly becomes a more efficient killer, a threat to guests and controllers alike. The Gunslinger's footfalls in their unbroken repetition take on metaphoric significance during the pursuit of Benjamin, coming to represent the consequences of unchecked technological growth for corporate gain and/or human pleasure. Westworld is, after all, an amusement park for the rich, where identity shifts for humans and the machines are encouraged. In the end, the Benjamin character is forced to unmask the simulacrum with acid and finally fire, destroying the body in a spectacle of excess, specifically burned circuits and sparks. The sound track explodes with various sound and Foley effects as this threat to human authenticity and control is contained.

Similarly, *The Terminator* echoes this attentiveness to body sounds as related to authenticity (identity) and control. In this case, the Foley sounds link the Terminator technology to issues of unchecked militarism. The Terminator is a product of Skynet, a military computer that has gained sentience and instigated a worldwide nuclear holocaust to gain control over the planet. In her article "Cyborg Manifesto," Donna Haraway notes, "The main trouble with cyborgs, of course, is that they are the illegitimate offspring of militarism and patriarchal capitalism."[22] But, more important, as "illegitimate offspring," they are "exceedingly unfaithful to their origins [fathers]" and quickly turn, bringing destruction and horror.[23]

Like the Gunslinger, the Terminator embodies this horror of Armageddon. It has been sent through time to kill Sarah Conner, the mother of the future leader of the human resistance. The Foley effects linked with the Terminator are coded with associations to metal and the mechanistic (the click of boots, processes of self-repair, and close perspective sounds of armaments). These sounds hint at the hidden identity of the Terminator beneath the human flesh. In the peeling away of the flesh (the extraction of an eye), the military endoskeleton of the Terminator is revealed. The Foley sounds detail the precision of the self-surgery by the Terminator—the click of instruments, the drops of blood, and the removal of flesh. It is a true spectacle of excess (and the body), which offers revulsion and revelation thus fulfilling both horror and science fiction expectations.

SOUND EFFECTS: ANTHROPOMORPHISM, INVISIBILITY, AND SUBJECTIVITY

Within the genres of horror and science fiction, there is slippage between the elements of ambience, Foley, and sound effects. This interpenetration is part of the design process, promoting unity and interconnection between layers. A sound effect can, however, be defined in general as a discrete recording of a particular sound event or a constructed event, produced from any number of various composite sounds or simply captured through innovative recording techniques. For example, a discrete sound effect might be a computer booting up or a set of lights flickering on, but, within a genre context, even these simple effects do not fall into the realm of "realism." In *Alien*, a simple lighting effect may include at minimum three layers of sound—a fluorescent filament clicking, a flurry of musical tones and an ambient hum. Beyond the mechanics of the creation of such an effect, a currency of meaning emerges when placed in the horror–science fiction context. In the opening sequence of the film, the composite sound effect of the ship's lighting establishes the idea that the body of the ship is coming out of a long slumber. This analogy is supported by the gradual awakening of the life support systems (air, heat, and communications) and finally the ship's crew. Throughout the film, sound effects take on elevated status as the veins of horror and science fiction feed into them, transforming them into an organism of sound. This organism will be more fully examined in the next chapter.

As explored earlier, the horror genre aggressively uses various motifs and metaphors to structure narrative content, yet one strategy recurs repeatedly, specifically the notion of anthropomorphism of objects, processes, or locations. In the genre context, fire screams, wind howls, and haunted houses groan. In the process of generic exchange, science fiction profits and transforms the notion by once again connecting it to technology or the Alien. In *Star Wars*, Darth Vader's ship screams in pain as an extension of his technologically enhanced body. In *The Thing* (1982), anthropomorphism is connected to the flesh and the alien more directly. In one scene, the character of McReady (played by Kurt Russell) performs a heat test on a Petri dish of each "man's" blood. When he reaches the human-alien hybrid blood, it screams and leaps from the dish to the floor when confronted with a heated coil of wire. The moment is charged with dread, horror, and shock, and the screams of the infected blood are echoed by the men who are tied to chairs with the unmasked alien (and its teeth).

If sound effects can create bodies, they can also be used to hide them. Sound effects in horror films have continually been used to hide visual

referents as a means of creating suspense, anxiety, and fear. Sarkar notes, "The sheer invisibility of the (potentially) monstrous induces horror."[24] The separation from the visual anchor establishes a sound body of its own, autonomous of the image, which challenges and destabilizes the Western epistemology that "seeing is believing." The invisibility of the referent is in part bound to production practices, as a means of saving money or hiding production problems. *Jaws*, in particular, faced unprecedented production delays and mechanical problems related to the mechanical shark—its eradication from the film, while effective, was not what the filmmakers had planned.

In horror–science fiction films, issues of invisibility converge with technology, and a ghost in the machine emerges. In the 1987 John McTiernan film *Predator*, filmgoers never get a complete gestalt of the creature until the end of the film. The film effectively hides the creature's presence by using sound effects and relying on subject point-of-view shots, which present digitally enhanced "scans" and multicolored heat signatures of the combat troops led by Arnold Schwarzenegger. When the Predator attacks, the sound track is filled with jungle noises (birds, movement of foliage, snapping of branches) as well as a strange, heavily processed clicking noise. The visual referent of the creature is hidden throughout as the Predator uses a protective cloaking shield, hardwired into a suit, which camouflages its presence like a chameleon. On the sound track, the clicking noise signals the creature's presence and becomes its signature sonic motif. At the end of the film, the sound is revealed to be that of the creature's chattering teeth, altered as it passes through a breathing processor hardwired to its protective mask.

Critical to maintaining horror and invisibility is controlling subjectivity. In *Jaws*, the shark is hidden in the point-of-view shots, which observe, stalk, and attack its victims. The horror genre is obsessed with limiting subjectivity as a form of claustrophobia related to knowledge and understanding. The technique provides the ultimate form of suture for filmgoers, offering a restricted and narrowed focus (if only for a short time). It is a forced glance, binding identification with the menace and instigator of dread. The opening of *Halloween* presents one of the premier examples of this positioning as the young Michael Myers puts on a Halloween mask, ascends the stairs of his home, and kills his sister with a kitchen knife. This point of view is accompanied by the requisite heavy breathing. Over the course of the film, however, audiences are forced into a pattern of shifting identifications, alternating between slasher and victim. The effect is a cycle of emotional variations from terror to release and relief.

Within the science fiction genre, the shifting of subjectivity is central to establishing tension as well, carrying the idea to the sound track level. According to Sarkar, "Film genres that revolve around relatively unconventional subjectivities are marked by a manifest dependence on their soundtracks."[25] In *Predator*, the image track emphasizes point-of-view shots of the soldiers it is stalking. The Foley effects of the men's footfalls are amplified and their voices recorded and mimicked, heard through the ears of the creature. In this way, the filmgoer is sutured into the listening position of the Predator. Also important, the sound of a heartbeat precedes each attack on the ground troops. The placement and position of the sound in the mix suggests that the Predator is technologically in tune with the body rhythms of its prey. The concept is borrowed from *Alien*. The sound effect presents a sonic point of view and a targeting system. The desire is to establish perceptual matching within the filmgoer, which creates a sense of dread and fosters the use of body-related effects. In such instances, physiology assists in establishing heightened anxiety, increased heart rate, and fear response as empathy goes out to the characters in the narrative. Audiences match to the sounds as they would to the rhythms of a drumbeat. The anxiety is supported by a split identification as well, between victim and attacker. There is sympathy for the victim and a sense of inevitability and dread charged in the position of the attacker. The inevitability of death is what is most distressing in such instances.

CONCLUSIONS

In the exchanges between horror and science fiction, even the most "natural" sound effects—ambiences, Foley effects—can be pushed into the realm of the supernatural with only the slightest urgings. In this context, terror is the scream that has no echo. It is the uncanny sensation of the familiar suddenly becoming unfamiliar. For the model of sound design, these excursions into the realm of horror–science fiction hybrids have expanded the palette of film sound in terms of construction, deployment, and reception. These genre experiments have allowed sound to move beyond the physical landscapes of the imagery presented on the screen into the psychological landscapes of the characters and subsequently the filmgoers. The results fostered a deeper sense of immersion in relation to the cinematic spectacles of this period and transformed audience expectations for science fiction and sound design.

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8

Alien

AUDIO-BIOMECHANICS

SINCE ITS RELEASE IN 1979 Ridley Scott's *Alien* has produced four sequels (*Aliens*, *Alien*^{3}, *Alien: Resurrection*, and *Alien vs. Predator*), a series of paperbacks, a variety of new media games, and volumes of critical and theoretical analysis.[1] So, like *Star Wars*, *Alien* too must be a familiar text. Or is it? Does anyone remember the sound of the heartbeat that precedes each Alien attack? Or the sounds of the different pulsating backgrounds for the separate decks of the ship? Or the sounds of frenzied respiration and footfalls as the crew attempts to escape to safety in the shuttle? Probably not. Although the images, characters, and narrative plot points have become ingrained in our culture memory, the sounds in the film are still unfamiliar and unexplored.

This case study analyzes how seemingly "realistic" sound effects in the film transform into expressionistic constructions. Specifically, I explore the interpenetration of the codes of horror and science fiction into three specific areas of the film's sound design—ambiences, sound effects, and Foley—and reveal the theoretical and textual implications of this fusion. Ultimately, what is revealed through the sound design is an organism that is much like the Alien in the film—part human, part machine—mutable, metaphoric, and very elusive.

SOUND THEORIES, SOUND REALITIES

How do sound effects, Foley, and ambiences function in a typical film? Sound supervisor Marvin M. Kerner, author of *The Art of the Sound Effects Editor*, would tell us,

> The function of sound effects is threefold: (1) to simulate reality; (2) to add or create something off scene that is not really there; and (3) to help the director create a mood.[2]

In short, sound functions to mimic "reality," create spatial dimension, and provide narrative content as well as a poetic stylistic. Sound also creates metaphor and spatial unity. In his discussion and critique of the sound production process, Kerner neglects to address production ideology (recording practices, processes, and the history of reading codes) as well as the influence of genre codes, considerations, and expectations.

Each of his categories serves various industrial, narrative, or directorial aims, which for Kerner are so naturalized that they are not mentioned or considered in his investigation of function, yet they are crucial in the construction and deconstruction of any sound track. Sound theorists Amy Lawrence (*Echo and Narcissus*) and Alan Williams ("Is Sound Recording Like a Language?") question these basic functions and aims in search of the hidden structures and influences behind them. Primarily, they have examined the conception of "realism" (a term used in both popular and theoretical discourse) that they argue is more aptly explored as representation. Lawrence writes,

> The myth of "objective" sound reproduction ("mechanical neutrality") disguises the ideology of the apparatus, including (a) the ideology into which the apparatus is inserted, and (b) that which it promotes and organizes itself around.[3]

In *Echo and Narcissus*, Lawrence examines how women's voices are contained and shaped by the narratives in which they appear, as well as by the sound apparatus that constructs them and Hollywood industrial practices that control them. Lawrence reveals that sound elements, specifically the voice and dialogue, are far from being gender neutral or "natural" in their construction. In particular, women's voices are highly fetishized through recording practices (filtering, smoothing, and editing) and are ultimately contained within the diegesis in classical Hollywood films such as *Rain* (1932) and *Notorious* (1946), thus elevating the masculine subject position and its dominance over the text. In short, sound always includes layers of coding and construction that is overdetermined and embedded by the production process and structures that support it.

Lawrence encourages a move away from "realism": "Sound film's efforts to camouflage its materiality behind a myth of realism needs to be

FIGURE 8.1. *Alien* (1979) Copyright © 1979 20th Century-Fox Films. An audio signal triggers a confrontation with an alien species in the horror–science fiction hybrid *Alien*.

strenuously deconstructed."[4] If we extend her model of analysis, even codes of "realism" are in fact *created* and passed along from production to production and thus formulating cinematic expectations. Unpacking codes of realism, however, is difficult. One of the key obstacles is the composite nature of a sound track that hides much of the material work of the mode of production. Isolation of specific sound cuts, fades, and even effects is extremely difficult, and rarely do individuals outside the industry have access to the separate tracks or elements used in the creation of a film sound track. Cue sheets, sound logs, and mixers notes would be useful in scholarly research, yet these documents are rarely preserved.[5]

In the move toward understanding and conceptualizing sound as a constructed representation, Williams begins his deconstruction at the most elemental level of film sound—the recording itself:

> My contention is that in sound recording, as in image recording, the apparatus performs a significant perceptual work for us—isolating, intensifying, and analyzing sonic and visual material. It gives an implied physical perspective on image or sound source, though not

> the full, material context of everyday vision or hearing, but the signs of such a physical situation. We do not hear, we are heard. More than that: we accept the machine as organism, and its "attitudes" as our own.[6]

"Realistic" sound effects, as we have seen, are entirely mediated by the recording apparatus and the technical choices that the recordist makes on the set or out in the field. Choices may include microphone selection (omnidirectional or directional) and variations in microphone to subject positioning, which establishes sound perspective and spatial cues. The apparatus filters, constructs, and presents a specific point of view.

As this study has shown, it is necessary to move well beyond the recording process to get at the true nature of any sound construction. Although Williams' conclusions are correct, he leaves out the crucial post-production processes of sound editing and mixing. Mixing and montage are highly manipulative processes by which sound is further isolated, intensified, and analyzed. In addition, genre considerations and codes must be accounted for as well by the model of analysis. Subsequently, in genre films such as *Alien*, the thump of a character's hands against a table, the scattering of dishes, and a flurry of desperate gasps can throw even the most "realistic" effects into expressionistic relief.

AUDIO-BIOMECHANICS

"I mixed up technical and organic things. I call this 'biomechanics,'" explains artist H. R. Giger, who served as the conceptual designer on the film *Alien*.[7] Giger's designs, like his poetic labels, are a fusion of the mechanical and the human. It is this conceptualization that merged science fiction and horror, sound and body. This concept pervades the film on every level. The production design features an Alien pilot fused into a navigational chair; a character within the narrative (Ash) appears to be a man but is a machine; and, most important for this study, the sound design offers a complex weave of human and mechanical noises, which in Giger's terms might be called "audio-biomechanics." The sound track and its reception fuse sound, body, and machine (and this needs aggressive deconstruction to be denaturalized and understood).

Giger's aesthetic approach serves as the basis for a dominant stylistic that controls the film and the perceptions of the filmgoer. On the sound track, Foley and ambiences are infused with issues related to organic unity, anthropomorphism, and gender, which keep the filmgoers in the

FIGURE 8.2. *Alien* (1979) Copyright © 1979 20th Century-Fox

FIGURE 8.3. *Alien* (1979) Copyright © 1979 20th Century-Fox. The audio and visual design of the film features a fusion of the mechanical and the human, in order to transgress traditional boundaries and create a sense of dis-ease and horror.

grips of stylistic and emotional excess. In "Horror and the Monstrous-Feminine," Barbara Creed notes the connection between the horror genre and the maternal figure and the term "abjection" (a concept borrowed from Julia Kristeva's *Powers of Horror*), which is defined as "that which does not 'respect borders, positions, rules' . . . [and thus becomes] that which 'disturbs identity, system, order.'"[8] The concept fits aptly with Giger's approach to the design of the visuals and the alien creature. It is important to bear in mind that it can also be repurposed to address the sound track, which transgresses borders (particularly genre related) and disrupts expectations on all levels. In this imbalance and interpenetration, the horror–science fiction hybrid can be found.

AMBIENCES AND SPATIAL UNIFICATION

In the opening sequence of the film, the camera moves from the exterior of the ship, through the lower decks of engineering, down passageways, and onto the main decks and living quarters. The musical score weaves in and out of the sound design as we cut into the ship. The ambiences for the various spaces shift subtly, providing different sound perspectives and cues that indicate the geography and breadth of the environment. Initially, the exterior transition shot as the ship passes is encoded with the low rumbles of the ship's engines, akin to a hiss or wind of an empty radio bandwidth. In fact, the shot includes the image of a communications dish. The steady, low rumble establishes the unimpeded purpose of the vessel, yet punctuates the fact that this ship is isolated and cut off in the vast reaches of space.

Inside, the sound design delineates the spaces of the ship, establishing the sonic geography and general atmosphere. First, the engine area is revealed. The clank and drone of metal moving like pistons establishes the sensation of motion and the propulsion in the vessel. The main decks share similar sounds, but the effects are muffled to express the distance from the previous space. The Hollywood industrial practices here are cleverly hidden. Sound cuts overlap slightly to avoid gaps, and sound levels are fairly consistent, hiding the work of the mixing apparatus, while sound processors (filters on the mixing board and reverberation chambers in the mixing studio) are used to dampen and distance the sounds to match the spatial images that are presented. Ultimately, the manipulation of these ambiences supports the notion of a unified space despite the fact that these are constructed sets and miniatures. "Realistic" sound cues (reverberation and sound absorption) are carefully constructed to

ensure a sense of continuity for filmgoers. Simultaneously, these same sounds evoke a hesitation in belief with these images. The science fiction genre depends heavily upon this contract of authenticity and credibility; it must also fulfill its obligations in terms of production values and craftsmanship. If ambiences do not match the spaces (based on previous genre codes and spatial perspective), the link breaks down, and the contract is broken. Arguably, within this genre, it is a link that is as important as the one established between the body and voice. Science fiction is ultimately about constructed spaces; therefore, sound ambiences are crucial in supporting and commenting on spatial geography.

DYSTOPIA AND DESOLATION

Beyond spatial unification, the ambiences take on greater layers of meaning in relation to the genre and narrative. Later in the film, the sound of ambient wind of LB426 emphasizes the harsh environment of the planet the crew explores, as well as establishes a sense of foreboding about the future of the ship and crew. *Alien* is particularly dystopic in its view of the future. After Captain Dallas has been killed, Ripley accesses the computer and discovers that the "Company" has placed its quest for profits ahead of the well-being of its employees in its bid to acquire this dangerous organic species for its "bioweapons" division. "Special Order 937," which Ripley discovers in the computer, reads, "Priority One—Insure return of organism for analysis. All other considerations secondary. Crew expendable." The wind of desolation accounts for these human failings—in this instance, it can be read as corporate greed. The dystopian sentiments are echoed earlier in the film through sound, when the communications systems on the ship give the same sort of desolate "air" as the crew tries to hail earth. Technology fails them, leaving them isolated in the vastness of space.

The repetition of dead air and desolate wind works much like a musical refrain. As with the haunting piano riff in *Halloween*, it cues the killer/the antagonist/driver of dread, establishing the mood. In *Alien*, the context is far more subtle as it builds metaphysical meaning as well. It evokes a loss of humanity and connection, working on the filmgoer to punctuate infinity, futility, and dread regarding the future as set by our present course of corporate capitalism. This is the speculative nature of science fiction converging with the horror aspects in the generic exchange. In this context, the ambience works to isolate the characters (and filmgoers), to strip away power and hope.

Even the ambiences associated with the ship assume this role. As the narrative unfolds, the space of the ship and the sounds that represent it narrow as the Alien intruder expands its territory. Sounds of alarms, blasts of steam, and rumbling blasts compress the geography of the space. It is as if there is no room for humanity when the new species is introduced. The safe zones for the cargo ship *Nostromo*'s crew grow smaller and smaller so that they are left only with a small shuttlecraft as their lifeboat. Through the ambiences and sound effects, a sense of claustrophobia is created for the characters and filmgoers (denying power and hope). This conflation reaches its pinnacle when Lieutenant Ripley (played by Sigourney Weaver) dons a space suit and creates her own self-contained, sufficient environment, which is punctuated only by the sound of her shivering breaths. She is isolated, alone.

In resolving the crisis, Ripley turns the stifled ambience to her advantage, blowing the shuttle hatch and ejecting the creature in a rush of wind. Desolation is turned into salvation. It is punctuated by an engine blast that sizzles and uncouples the Alien from its tether, sending it spinning into space. As discussed in chapter 6, the sound design and surround channels immerse filmgoers within the extended diegesis (albeit a close-quartered space), offering suture and identification with the character. Balancing this spectacle of visceral effect is the metaphysical meaning and impact—the fears of uncertainty and doubt about the future.

SHIP AS MOTHER: SOUND EFFECTS AND ANTHROPOMORPHISM

In addition to transforming natural elements in the narrative, the sound design also energizes the mechanical elements with expressionistic meaning. In particular, the *Nostromo* takes on the characteristics of an organic body, thus infusing the technology with the potential for horrific excess. As the camera moves to the flight deck of the ship, slinky toys and pens attached to the consoles bob, a crew chair shudders with movement; paper moves as the air systems charge up; and the camera rests on a helmet. The images cross cut between the helmet and computer screen. Nearly every important sound effect in the film is contained in fragmented form in this short sequence. The methodology of the sound cutting is much like the composition of a music score: a melody or leitmotif is established and the score plays out variations and riffs of the pattern. Melodies or leitmotifs function to establish character and an emotive effect on the filmgoer. A dark lyricism settles in. Here, discrete sound effects are introduced and later they are expanded upon in repetition and

variations as the narrative progresses. The result supports the narrative ideology of the ship as an organism and a character, while also offering sonic containment and unity.

The score by composer Jerry Goldsmith (*Star Trek—The Motion Picture* and *Poltergeist*) works in conjunction with the sound design in a unique way to interpenetrate the sound effects elements. Other science fiction films of this era—*Star Wars* and *Close Encounters of the Third Kind*—use scores and orchestrations reminiscent of the classical Hollywood period, which was dominated by the influence of composers Erich Korngold and Max Steiner. In contrast, Goldsmith fragments this aesthetic and incorporates musical instruments like sound effects and ambiences. Strings are plucked chaotically to sound like falling rain and wind instruments move toward extended sustain and simple tonality to carry the sense of desolation and tension. The effects are disturbing because they play off musical codes of the horror genre directly. A cliché of this strategy would be a low tone oscillated on a cello. The music and the ambiences of this film use these codes extensively, rising and falling, to create a heightened anxiety and sense of dread in the filmgoer. The spectacle of sound is embedded within the musical movement, conspiring to offer a fearful, unseen presence that is invisible to the eye.

As the camera moves across the deck, again we hear the ambience of the ship. As the ship awakens, so do the metaphoric implications.

The ambience of the clanking pistons becomes the heartbeat as heard by a child within the uterus. (Later, the heartbeat will be transferred to the child-alien.) That the ship is engendered as female is important because this builds a collection of birthing metaphors and analogies. This distinction can be traced to Maritime Society in which vessels were gender coded by their crews. Also, the narrative supports the notion through terminology. The computer that controls the ship is called "Mother," based on its computer designation "MU/TH/UR/ 6000."[9] The frigate connectors are called the "umbilical." Barbara Creed argues that one of the ways in which the horror films work to create anxiety and dis-ease is by constructing the "maternal figure as abject."[10] In this way, the *Nostromo* traps the crew, coddling them at first, and then preventing them from escape. As Creed notes, "[T]he vessel which the space travelers initially trust . . . is revealed as a treacherous figure programmed to sacrifice the lives of the crew in the interests of the Company."[11]

If the crewmembers are contained by the ship, so are the filmgoers. Physiologically, the heartbeat ambiences in the opening scene have an important effect of lulling filmgoers into a position of fetal plenitude. The

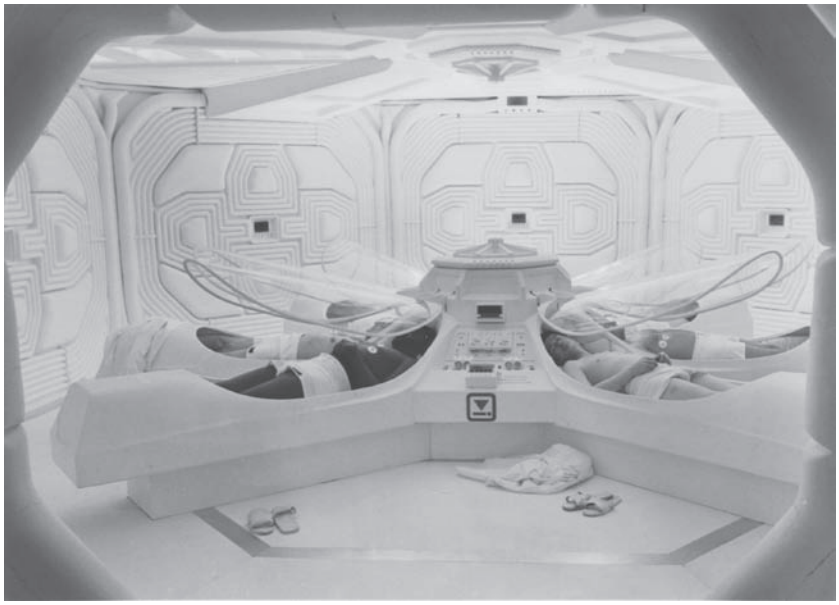

FIGURE 8.4. *Alien* (1979) Copyright © 1979 20th Century-Fox. The "MU/TH/UR" ship awakens the crew, as the sound track provides an overture of sound effects that will be played out in the course of the film.

sound levels and unbroken nature of sound presence support the conceptual framework of the film. An instance such as this offers a pure example of the symbiosis between sound apparatus—sound object—and filmgoer. In short, a vibration of sound resonates within the body. Other sounds assist in the fusion by offering other visceral connections. Oxygen is plentiful, as is indicated by the sounds of movement of papers on a table, and the toys attached to the various consoles click and spring, establishing a visual and sonic playpen for those in the film and those watching and listening to the sound track.

At the computer station, the screen awakens. The sound effects jump cut in rapid succession, varying in level and pitch. The sound effects include computer noises, teletype printing, intercom blips, data disks moving, a radio-processed sound, and an alarm signaling, then complete silence. It is only in the final sequence that the computer will get a voice, completing the final sonic phase of humanization and characterization. As in a music score, all of these sound effects recur throughout the film. For example, each time a crewmember accesses the computer, the

teletype sound effect recurs; the radio processing noise occurs as the pilots attempt communications; and the alarm signals warn of the imminent destruction of the ship. The containment and repetition of the effects emphasize the unity of the organism. The computer sounds are also coded as communication units, carefully deciphered by the crew. Alarms are screams, warning of danger. Clicks are sometimes warnings. It must also be noted that the symbiosis between crew and "mother" occurs on every level; they even have their own language.

Later, when the hull of the freighter is ruptured as the *Nostromo* descends to the planet LB426, the expulsion of air sends a scream through the ship and the surround sound channels. In response to the howl, the engineer Parker yells, "What the hell was that?" In this context, the sound of the breaching ship foreshadows the chest-busting scene later in the film. The ship, like Kane, is given a voice, albeit only to be able to scream and howl in pain. This ship also breathes, talks, and monitors life support, maintaining homeostasis. With this anthropomorphic turn, the filmgoer is given another reason to identify with the ship as an organic-technological construction, becoming emotionally invested in its fate and the fate of her crew.

Other important sound effects complete the formulation of this anthropomorphic organism. The computer room in which the captain and later Ripley interact with the computer resonates with the sound of close perspective breathing. The close recording of the sound emphasizes codes of intimacy, and the rhythmic nature of the breathing offers a sensation of calm. The death of this organism comes all too quickly, though. When the main ship detonates, two sound effects occur to signify the death. The pulse of the ship, monitored from the shuttle, beeps rhythmically then flat lines like a heart monitor signaling cardiac arrest, and within the final explosions, screams overlap the three low booms that decimate the ship and her cargo. Throughout the narrative, the character of the "Mother" is established with these highly coded sound effects, a system of dependence is explored, and the sonic life cycle of the ship is examined from birth to death. But what about the ship's offspring? The sound of children?

SOUND EFFECTS AND THE CHILD-ALIEN

In "Re-imagining the Gargoyle: Psychoanalytical Notes on *Alien*," Harvey Greenberg writes, "The creature is mysteriously ungraspable, viciously implacable, improbably beautiful, and lewd."[12] Within the creature, Giger's

stylistic of "biomechanics" plays out in its most complete form. The parasitic organism gestates inside a human host, using part of the host's DNA to formulate itself. It then destroys its womb and begins quickly adapting and mutating to its environment. When the creature reaches maturity, it is a mix of the organic (skin and cells) and the mechanical (metal teeth and black dorsal tubes) played out within the shadowy outline of human form. As Greenberg notes, however, the creature is "photographed so obliquely that a coherent gestalt can never be constructed."[13] In terms of sound, the stylistic approach dictates that the creature share both human and machine traits. Though the creature does lack language, Greenberg notes, "[i]t is not inconceivable that it can read the crew's thoughts."[14]

When the creature is born and when it later attacks, it is linked with two sound effects, specifically the scream and the heartbeat. The scream effects are a complex mix of human, machine and animal noises that are processed through filters and pitch shifted to create a shrill noise. It is in cases like this that cue sheets and mixing notes would be extremely valuable in determining the exact mixture. The layers fuse to establish the link between machine and organism. During the attempts to capture the creature, the captain of the vessel, Dallas (played by Tom Skerritt), works his way through the airshafts, cutting off various escape routes for the creature. Despite his efforts, the fully grown creature suddenly appears, attacking with arms open. The image track literally gives just a flash of the visual referent, while the sound track sustains the scream of the creature, which carries across into the communication systems of the ship like audio feedback. This sound is recognizable to anyone who has accidentally held a live microphone to a sound speaker. The layered and processed nature of the sound is played out in this single effect, synchronized to emanate from the machine-beast image and processed to sound as if heard through the audio headset worn by the character Dallas. The blur of the mechanical and the human is apparent as each step in the construction serves the conceptual style of the film. In the end, the scream appears to be gender neutral, perhaps because the creature is hermaphroditic, though it is still vaguely human. The crewmembers and filmgoers hear the incident only through technology, creating a sensation of dislocation. The effect also offers a narrative commentary, reinforcing the notion that the Alien is as much a part of the ship as it is an autonomous organism and that it is in control. In this way, it remains invisible even in the shuttlecraft where it seems to merge with the pipe, wires, and computer technology. Like a faulty piece of technology, however, it must eventually be changed out and disposed of by the end of the film.

The Alien creature is also distinguished by the sound of a heartbeat. The effect seems to be transferred from the mother ship to the child-alien as an extension of technological anthropomorphism. The sound of a heartbeat precedes each attack of the crewmembers by the Alien. The volume of the sound effect slowly rises from the heartbeat ambiences of the ship to a position of privilege. The placement and position of the sound in the mix suggests that the Alien is in tune with the body rhythms of its prey. As in the film *Predator*, it establishes a sonic point of view. With each Alien encounter, the heartbeat effect appears, slowly fading in. It becomes an important leitmotif to identify the character of the Alien, and it offers only one variation. At the end of the film, when Ripley is in the shuttle, the heartbeat is replaced by a mechanical beep, which cues the creature's hand to suddenly lash out. The lack of the characteristic heartbeat makes the creature's appearance even more shocking, but also suggests that the creature may have been fusing with the ship's technology. A certain amount of ambiguity can be read into this particular effect. Because Greenberg has suggested the notion of telepathy, the heartbeat may be that of the Alien's prey (the crew) and function like a targeting mechanism. In narrative terms, it would then match the sonic tracking device used by the crew to search the ship. The heartbeat may then simply serve as a signature for death.

BODY SOUNDS AND FOLEY

When the remaining crew members (Parker, Lambert, and Ripley) decide to detonate the ship, they rush down a corridor and formulate their escape plan. As they move their bodies, clutch their weapons, and walk on the grates of the ship's decks, the sound track fills with the reactive sounds, yet these are often not production recordings. These are constructed on the Foley stage by Foley artists and cut in synchronization to the picture. Despite the mundane nature of the effects, a certain amount of coding does occur. Foley sounds provide pivotal sonic anchors to the body and unify the space in which the body moves. In terms of production practices, close microphone perspective delineates each sound very clearly and very intimately. In the example above, the Foley creates a feeling of claustrophobia. The frenzied nature of the footsteps, the rapid movements of clothing, and the labored breathing all suggest entrapment. In short, spatial unity of the corridor is established as well as a geography of the body within it.

In this category of sound design, there is considerable slippage

between Foley and ADR, particularly in the area of breathing which can sometimes be considered dialogue and other times Foley or effects. Breathing, however, is charged with an aspect of gender. In the final sequence of the film, Ripley puts on a life support helmet and her breathing becomes labored and processed, echoing off the inside of the helmet and picked up by the inside microphone. At this point, the breathing is coded as claustrophobic, feminine, and, as some have suggested, erotic. Greenberg notes,

> Her breathing, amplified within her helmet, is heard in accelerating gasps and moans (libidinous variation on the famous sequence in *2001*, where Dave Bowman's breathing is heard echoing in his own ears, as he goes to disconnect the murderous HAL).[15]

Greenberg reads the scene as a seduction/rape, and the Foley/ADR sounds seem to support this notion. Greenberg also sees the sound as an echo to a previous work in the genre, *2001*. This is important to note because rarely is sound seen to have references to other works, despite the fact that sometimes even the same sound effects carry over as sound creators share effects and emulate the work of those they admire.

BODY HORRORS

As Foley transgresses its normal function, a sense of distrust around the body emerges. In a conversation with Ripley, Dallas notes, "I don't trust anybody." The anxieties emerge around breaking of the ships protocol, hierarchy in command, control and ultimately, human authenticity. It is the science officer, Ash (played by Ian Holm), who comes to embody the terror of the unknown that lies within. When he finds that Ripley has read the Company's orders regarding acquisition of the Alien, he attempts to kill her, but, fortunately, the crew intervenes. In the struggle, one of the ship's technicians, Parker (played by Yaphet Kotto), decapitates Ash with a fire extinguisher. As Ash's synthetic body disintegrates, it spews white fluid in jets, its limbs flail knocking at the walls, and its circuitry babbles, squeaks and chatters as it shorts out. The Foley and sound effects extensively cover the explosion of the body and its loss of identity (his exposure as nonhuman). The spectacle of excess (on the narrative and sonic levels) reveals the robot as a threat both to human authenticity as well as human survival.

The most transgressive extension of this fear of the body and subsequent excess of body sounds (and identification) comes in the birthing of the Alien creature itself. Gestating in the stomach of crewmember Kane (played by John Hurt), the creature rips through the man's chest cage, eviscerating him during the crew's final dinner. The Foley effects blur in a clutter of choking sounds, struggling noises, plates scattering and crashing, screams, bones breaking, and the rush of bodily fluids. The body's own organs and life-sustaining fluids well up to attack and decimate the whole as the creature is born. The horror and perceptual matching on both visual and aural levels is primal. Greenberg notes that "each viewer's catastrophic response to Kane's disembowelment may well be determined by reactivation of personal archaic fantasies about primal scene and the birth process."[16] The birth of the creature punctuates the birthing imagery that runs through the entire design of the film and aptly represents the complexity and ingenuity of generic exchange between horror and science fiction. Rather than the grandeur of the birth of the Star Child in *2001: A Space Odyssey*, the birth in *Alien* is an abomination, a speculation brought forth from a corrupt and desolate future. In addition, it focuses the horror of the body, not on the female body as is generally the case in horror films, but rather inverts the paradigm onto the male body.[17] It is a transgression of the horror genre axiom (according to Linda Williams) that "women make the best victims."[18] The entire course of the film does not, however, stray too far from the axiom as it leaves Ripley (the lone female crew member, a hybrid of "the final girl" and science fiction hero) to confront the Alien in a battle to the death in the final sequence of the film.[19] Both horror and science fiction expectations are thus fulfilled.

THE VOICE

Although this particular sound track relies heavily on sounds other than the voice, it is worth noting how the use of sound in the film engages Kaja Silverman's seminal theories on the voice. In *The Acoustic Mirror*, Silverman argues that

> Hollywood's soundtrack is engendered through a complex system of displacements, which locate the male voice as the point of apparent textual origin, while establishing the diegetic containment of the female voice.[20]

She also notes that the female voice is logistically and linguistically constrained by Hollywood sound practices. The sound track of *Alien* offers some excellent examples (i.e., Ripley's breathing contained inside the space helmet), and in an early scene it is a sound effect that facilitates the "containment."

After the ship has made a less-than-smooth landing on the planet surface, Parker, Brett, and Ripley survey the damage to one of the decks. As the scene plays out, Ripley speaks to the men through the rising sound of steam hissing from a pipe. The corridor bellows with white smoke.

The sound, controlled by Parker, rises to a cacophony and Parker even joins in with a childish taunt "What'cha say Ripley?" as the sound reaches a final pitch, drowning out Ripley's voice and her authority. The difference in power positions is evident—she is an officer and they are engineers—and the sound effect is uniquely engendered to punctuate the notion of male lack.

It has been suggested by Annette Kuhn that *Alien* is a film about male

FIGURE 8.5. *Alien* (1979) Copyright © 1979 20th Century-Fox. Using a steam-release valve, Parker (Yaphet Kotto) taunts Lieutenant Ripley (Sigourney Weaver), drowning out her voice and thereby challenging her authority.

anxieties "set loose by a decade of feminist and gay activism" and that the manifestations of the anxiety carry a wide range of examples.[21] Kuhn writes, "Alien was a basically male anxiety fantasy: that a man could be impregnated was the ultimate outrage."[22] Women face equal outrages in terms of sound and the voice. Throughout the film, the women's voices are suppressed, despite the fact that they are the true voices of reason. Kane orders Lambert to "quit griping" as they head out to survey the Alien ship, and Ripley is countermanded and patronized at crucial command moments, particularly at the moment when she refuses to admit the contaminated Kane onto the ship. The suppression of the female voice culminates when Ripley is nearly choked to death with a pornographic magazine rolled into a phallus-like tube. The symbolism is blatant. Not only is her voice in jeopardy of suppression, so is her life.

This containment of the female voice is transgressed in part at the end of the film, when Ripley's voice takes over a narrative function. She states in her log entry,

> Final report of the commercial starship *Nostromo*. Third officer reporting. The other members of the crew—Kane, Lambert, Parker, Brett, Ash, and Captain Dallas—are dead. Cargo and ship destroyed. I should reach the frontier in about six weeks. With a little luck, the network will pick me up. This is Ripley, last survivor of the *Nostromo*, signing off.

In the end, she is the sole survivor and the final authority over what has occurred. Although this voice is mediated by technology, her voice resonates not just in this film but also throughout the series. In the third film, these same lines are displaced outside the diegesis, giving her authority over that narrative and the prior installments. Unfortunately, the fourth installment seems to undo this authority, as the military takes over not just her voice, but her DNA, creating a genetically enhanced version of the Ripley character as a means of extracting the Alien. Issues of the voice will be more fully explored in the next chapter in relation to another Scott film, *Blade Runner*.

INTERPENETRATION OF SOUND EFFECTS, AMBIENCES, AND FOLEY

A key scene at the end of the second act brings together all of the various elements that have been examined so far, and the sound design of the scene is so powerful it threatens the hierarchy that privileges image over

sound. As Lambert and Parker check the oxygen canisters, Ripley corners the ship's cat and puts him into a carrying case. The open microphone links on the ship allow her to hear the canisters of oxygen being thrown to the floor by Lambert and Parker. Immediately, the Alien emerges and Lambert and Parker are attacked. Ripley desperately runs to them, but she discovers both are dead.

Music plays a significant role in establishing the tension of the scene; however, the integration of the sounds is far more disturbing and enervating. The open microphone links allow an overlapping of the sonic scenes. This narrative device allows the sound editing and processing to be hidden within the diegesis. The result is a unification of sound and space. The open microphones allow the simultaneity of the events to be established. Ripley runs (her footfalls resonating) at the same instant Lambert begins her screams of panic. The ambience over the multiple images of Ripley running remains constant, thus unifying the image cutting.

The Foley of her footfalls indicates movement through space and provides sonic anchors in relation to her body. Steam effects and their accompanying sounds block her way through the passages. The effects are linked to the anthropomorphism of "Mother." Ripley's gasps reveal her desperation in the situation. At the same time, Lambert's voice is stolen in the panic of the moment. Her lack of speech is another example of the suppression and containment of the female voice in the film. Meanwhile, Parker is killed in a cacophony of music. Finally, Lambert breathes and screams as Ripley listens in. The voice is recorded in close perspective and heavily processed. Lambert's death is not shown, but implied entirely through the sound effect of her screams, which are compounded in volume until they are abruptly cut off. The totality of the Alien remains invisible for the most part, largely hiding in the chaos of the sounds. The off-screen death is one of the key conventions of the horror genre because it forces filmgoers to fill in the blanks. In this instance, the sound design overwhelms the image.

CONCLUSIONS

The interpenetration of horror and science fiction conventions in *Alien* transformed even the most "realistic" sound effects—ambiences, Foley, and general sound effects—into organisms of the fantastic, which stalked and eluded audiences in the corridors of the narrative diegesis. The uncertainty and unpredictability of these sound effects, however, tie into

the pleasures of horror and specifically, tension established in haunted house films. We never know what terror is around the next corner. The dark lyricism of horror that has settled into the science fiction sound track has brought this question to not only the sense of place but also concerns about technology and our understanding of time. Thus, the question arises, "What does the future hold?" In Scott's next film, *Blade Runner*, he offers some answers to this question and provides provocative new questions that sound design is uniquely situated to address.

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Part V

Voice Design

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9

Blade Runners

A CRISIS IN VOICING AUTHORITY, IDENTITY, AND SPECTACLE

RIDLEY SCOTT'S 1982 FILM *BLADE RUNNER* is perhaps one of the most written-about science fiction films in contemporary cinematic history. It is also the number one film screened in science fiction courses at universities. Based on Philip K. Dick's classic science fiction novel *Do Androids Dream of Electric Sheep?* (1968), the film features a conflation of science fiction and film noir, drawing on a stylistic approach that looked forty years forward into the future and forty years back. The critical discourse surrounding the film includes numerous volumes related to the production history of the film, including Paul M. Sammon's thorough and detailed *Future Noir: The Making of Blade Runner* and various theoretical works, including *Retrofitting Blade Runner*, a collection of essays edited by Judith B. Kerman, which offers an array of insights and critical approaches.[1] Yet none of these works significantly address the primary site of difference between the original theatrical release in 1982 and the subsequent *Director's Cut* released in 1992—specifically the voice-over. When and if the issue of the voice is included, the debate is limited to the issue of "necessity" or an evaluation of the quality of the vocal performance. Ironically, these arguments echo the debates around the need and function of sound in cinema during the transition to sound.

Further clouding the voice-over debate is the production history of the film. Various historical accounts of the production of *Blade Runner* have argued that the voice-over was forced onto the film by the film's distributor, Warner Bros., without the director's consent. The voice-over, however, did appear in a number of the early drafts of the screenplay and was considered by both the director and the studio during various stages of the production process. In part, the voice-over came from the novel as a sort of scaffolding on which the film's rich visual spectacle would hang.

Nevertheless, it does not appear as though, during the production of the film, that the filmmakers intended the voice-over to be an integral part of the narrative. Anticipating changes in the story and the visual design, writer David Peoples has noted, "We wanted to make sure that the storyline wasn't dependent on the narration."[2] Yet three versions of the narration were recorded during the postproduction of the film. In an interview, Michael Deeley called the voice-over a "concession" to Warner Bros. studio executives, who criticized the film as "Dull. Pointless. Confusing."[3] As a result of these production considerations, the credibility and the intent of the voice-over in the original theatrical release was thrown into question.

Most important for this study, the voice-over in *Blade Runner* reveals a crisis in the status of the voice in contemporary genre cinema and subsequently in the model of sound design. Through an extended comparison and contrast of the two versions of *Blade Runner*, this chapter deals exclusively with issues of the voice, specifically its privileged status within the sound track hierarchy, its connection to narrative authority and subjectivity, and, finally, its relation to cinematic spectacle. The significance of this comparison is that it demonstrates the shifts in reading protocols in terms of both film sound and genre as the blockbuster cinema aesthetic developed between the 1980s and 1990s. When the two versions of the film are set in relief, they provide an example of how sound design and science fiction continue to adjust themselves against a backdrop of changing audience expectations and shifting industrial imperatives in contemporary Hollywood. One of the most relevant of these imperatives was the entertainment industry's focus on the sales of videos, laserdiscs, and now DVDs and remastered versions of films as a means of fostering corporate profits and expansion. This focus supported the repetitive viewing strategies encouraged by the blockbuster tradition, but it also revived long-forgotten and overlooked films. In fact, video sales and rentals solidified *Blade Runner*'s status as a cult film and fostered the remastering and re-release of *Blade Runner—The Director's Cut* into theaters in 1992, where it finally achieved the status of "blockbuster" after its initial box office failure in 1982. It is important to remember that sound design, particularly voice-related considerations, played a crucial role in the revival and reconfiguration of this seminal science fiction film.

CREDIBILITY AND STATUS OF THE VOICE

With the inclusion of the voice-over in the original release of *Blade Runner*, the filmmakers attempted to draw filmgoers into the narrative

through a traditional filmic device, simply allowing the main character to *tell* the story. In classical Hollywood cinema, this type of voice-over implies subjective authority, offers the possibility of self-revelation and nostalgic recollection, and drives the plot through exposition. In *Blade Runner*, the voice-over serves many of these functions. Against the complex weave of dense images and deeper thematic issues, however, it destabilizes the narrative, throwing into crisis the image-sound relations and subsequently their emotive and visceral impact. In short, the spectacle and thematic conclusions of the film hinged on the fragmented and flat explanations of the proceedings by the main character, a down-and-out cop-assassin named Deckard.

Filmgoers recognized this cinematic approach as arcane, a throwback to the film noir stylistic from Hollywood during the 1940s and 1950s. Noir cinema often used voice-over as a means for troubled characters (usually male) to reflect on a personal crisis, trauma, or death. These voice-overs were always suspect, considered unstable constructions, yet they offered a limited and controlled subjectivity over the narrative. On the issue of instability and crisis, Kaja Silverman offers these examples:

> The voice that narrates Billy Wilder's *Double Indemnity* (1944), for example, "belongs" to a dying man, who received his mortal injury at the hands of a woman. The voice-over in Rudolph Mate's *D.O.A.* originates from a man who has been fatally poisoned. The voice that narrates Otto Preminger's *Laura* derives from a character who is shot to death during the course of the film, and whose virility is in doubt from the very outset.[4]

Similarly, Deckard's voice in *Blade Runner* is in an existential crisis and thus unstable. It offers the reflections of a "man" who constantly questions the nature of his job (i.e., his purpose in life), his own judgment, and his own conflicted emotions regarding love and death. After an encounter with Rachael (played by Sean Young), Deckard states, "Replicants weren't supposed to have feelings. Neither were Blade Runners. What the hell was happening to me?" As a noir convention, the specifics of the voice-over reveal that Deckard's hardboiled persona is thrown into crisis by the assignment to track these replicants, one of whom he is falling in love with.

Complicating this status, the voice-over does not seem sincere in both its performance by actor Harrison Ford and its use by the filmmakers, which adds further instability. Ford notes, "It was in my contract that I do the voice-overs, but I hated them."[5] Of the performance, Scott notes, "We

FIGURE 9.1. *Blade Runner* (1982) Copyright © 1982 The Ladd Company. Both actor Harrison Ford and director Ridley Scott struggled with the use of the voice-over in the original theatrical release of *Blade Runner* in 1982.

just couldn't get it. We wrestled with it and wrestled with it. Which frustrated Harrison to no end, because he's clearly a talented and formidable actor."[6]

Scott also seemed ambivalent about the overall use and need of the voice-over in his accounts of the making of the film:

> You start to convince yourself that, well, it's going to be okay. . . . It's only when you really view and hear these things years later that you think, "Oh my God! It's awful! Because A) *Blade Runner*'s voice-over was over explanation, and B) the narration, although admittedly influenced by Raymond Chandler, wasn't Chandleresque enough."[7]

The consequences of the inclusion of the voice-over to the sound design were critical. Because of these layers of destabilizing factors, Deckard's voice and its credibility were brought into question, which eroded his subjective authority over the narrative. The voice-over languished in a middle ground, offering an authority with limited knowledge yet revealing an uncertain character torn in his love for the object of his scorn, the

replicant Rachael. In this way, the voice-over construction revealed the unresolved tension between the genre conventions of science fiction and film noir.

In the fall of 1992, when the film was re-released in the *Director's Cut* version, the voice-over was removed and key scenes reintegrated, particularly the dream sequence involving a unicorn. The "happy ending" of the film (in which Deckard and Rachael escape in a hovercar into the mountains) was also trimmed. The difference was immediately apparent to film critics and filmgoers who reevaluated the film and labeled it a "masterpiece." Few, however, connected the change in status to the voice and the altered sound design. Without the voice-over, new image-sound relations appeared that significantly altered the narrative and plot structure as well as the nature of the spectacle and its impact. In addition, the re-edited and remixed *Director's Cut* encouraged filmgoers to swim in the dense sonic and visual world of *Blade Runner* as it foregrounds the music composed by Vangelis and the film's ambient backgrounds and sound effects. The results were lyrical and visceral, rather than detached and analytical, which is much more in keeping with the blockbuster tradition. More important, the status and identity of Deckard changed significantly. The excising of the voice-over removed Deckard's voice from its position of authority over the narrative and the sound track hierarchy and repositioned the character more firmly within the diegesis and its narrative ambiguities, pushing the film further into the dark recesses of film noir sensibilities. The revised version heightens the emotional crisis for the character, not just on the issue of death but also on life and humanity, which connect more fully to the science fiction genre. With the inclusion of the additional scenes, the narrative more fully raises the question of whether Deckard is in fact human. As with the other characters in the film—the replicants—his subjectivity and even his memories are in question (Who knows his dreams?), and this is the site of crisis in both the character and the film. In the *Director's Cut*, the film noir and science fiction elements conjoin more fully, and the end result of the removal of the voice-over and the restoration of the deleted scenes is that it deepens the thematic inquiry of the film, focusing it more fully on the nature of memory, identity, and ultimately humanity.

PRODUCTION AND THE PRIVILEGE OF THE VOICE

The two versions of *Blade Runner*, which were released nearly ten years apart, unintentionally revealed the status of the voice in contemporary

Hollywood cinema by calling attention to the placement and manufacture of Harrison Ford's voice-over. The crisis was limited primarily to issues of necessity and performance, but it also reveals the highly constructed nature of the voice and its impact on image-sound relations and narrative. In general, representations of the voice have always maintained a privileged status within the hierarchy of film sound, superseding both music and sound effects. This emphasis is in part due to the fact that, institutionally, the voice has aligned itself so closely with the technology and production practices of cinema sound.[8] In fact, the voice is often the most aggressively manipulated element of the film sound track. In the recording process, microphones are specifically designed to enhance the qualities of the voice, assuring fidelity and intelligibility of dialogue, which the mix process also foregrounds. As has already been explored in relation to multichannel presentation, dialogue resides primarily in the center speakers, thus giving it further privilege within the theatrical exhibition space. Microphone positioning is a key part of the construction and coding process as well. In the recording of a voice-over, close microphone positioning offers a quality of "authority" by accentuating bass response and codes of intimacy. Historically, the close positioning recalls the radio aesthetic. The voice of Deckard in *Blade Runner* plays on these codes of intimacy. The voice-over is recorded without background ambience and in close perspective, which in effect establishes direct access to the character's inner thoughts. In the first sentences of the voice-over, the film blurs the line between narrative exposition and introspective guilt. Deckard tells us, "They don't advertise for killers in a newspaper. That was my profession. Ex-cop. Ex-Blade Runner. Ex-killer." The confessional quality is almost uncanny in its effect to float over the imagery and thus gains privilege over even the dense visual elements of the rainy urban squalor. Theorist John Belton argues that, in such instances,

> The authority of a voice-over track is partly the result of its spatial qualities. It occupies a space that is beyond or outside that of the film, thus it can be either privileged (*Apocalypse Now*) or disadvantaged (*Days of Heaven*) in terms of its knowledge of information on the picture "track."[9]

The recording and placement of the voice-over removes it from the visual and spatial anchors of synchronization and background noise, only to anchor it in the consciousness of the character. In this instance, the voice dominates the sound design, competing against all of the other elements

(music, ambiance, and effects). In the narrative framework of *Blade Runner*, the voice-over reveals Deckard's observations and analysis of events within the diegesis, and it is impossible to ignore despite its credibility problems. The power to enunciate and explain is part of its authority.

In the *Director's Cut*, the remix of the sound track places the dialogue in the foreground, which changes its status within the narrative but not to the extent of the voice-over. Dialogue serves as the scaffolding around which the entire sound design is based, but it functions differently from the voice-over. The characters of Bryant, Tyrell, Sebastian, and even the scientist who makes eyes all offer crucial information through their dialogue. Narrative authority is thus spread among the characters, rather than remaining centralized with Deckard. Navigation of the film's narrative then becomes more complex as judgments must be made about the credibility of a variety of characters and the information they provide. In addition, sympathies are split between Deckard and the replicants, who are trying to find a way to extend their lives and thus survive.

As this scaffolding is examined even more closely, dialogue's ability to relay information does not simply rely on words. In this study, it is important to consider that dialogue provides essential spatial cues that connect the voice to the diegesis of the film. Echoes, reverberation, and synchronization all provide cues of spatial and temporal unity, which quell anxiety about cinematic narrative as a construction. These techniques stabilize and authenticate the characters and diegesis, which contrasts sharply with what a voice-over does. In an early scene in Tyrell's office, Rachael enters and asks Deckard, "Do you like our owl?" The voice carries a slight echo as she walks toward the table, anchoring it both to space being presented and to the image of her character. The attentiveness to synchronization further embeds the connection of the voice to this character and her image. Yet, true to film noir sensibilities, this privilege can also be read as fetishizing the female voice through sound spectacle. Again, the tension between science fiction and film noir appears in the subtle application of such effects. Overall, however, the voice is contained within the narrative world.

Although the dialogue in the *Director's Cut* takes a more prominent position in the narrative process, rupture of dialogue codes and credibility has the potential to destabilize the work as well. This potential can be examined in almost any passage of replaced dialogue or, Automated Dialogue Replacement (ADR). ADR, which is a means by which actors re-record their performance in synchronization with the projected picture, is generally used when production recordings are unusable because

of technical, performance, or production considerations. A great deal of the dialogue in *Blade Runner* was replaced through the ADR process because of difficulties related to special effects and microphone positioning within the elaborate sets. In general, the recording of replacement lines is done "dry" within an ADR studio without the environmental presence of the original scene. "Bad" ADR is perceived as unprofessional, so the matching process of ADR to the image involves layering in ambience or presence from the original scene during the mix-down and adding reverberation. Yet, the variables or potential points of exposure are numerous and include synchronization, microphone type, microphone-to-subject position, and character movement. Any one or all of these factors can rupture the unity and credibility of the image-sound relations. In *Blade Runner*, when Deckard visits the snake designer, such a rupture occurs. The lines of dialogue for both characters are out of synch throughout the scene, and, by the end of the shot, we hear the snake dealer giving up the location of the snake's owner, but we see Deckard talking and ironically, choking the man with his own necktie. The mismatch of the ADR to the action reveals the cinematic process, a point that many fans have noted as a site of rupture in terms of image-sound credibility. The rupture is tempered somewhat by the camera-to-subject distance and by the fact the scene is shot from street level through a glass enclosure holding a snake. At best, these ruptures reveal the tenuous nature of the voice within the sound design model.

Traditionally, though, production practices protect against such ruptures, especially in relation to editing and mixing. In dialogue editing, the recordings of the various actors' voices are split onto separate tracks to allow more options in terms of equalization and manipulation during the mixing process. For this same reason, recorded dialogue tracks are divided by gender as well. In part, the privilege of the voice is drawn from technical concerns. Because the voice has a limited frequency range, the other elements of the sound track are often subordinated to the voice to ensure that the lower frequencies do not mask the midrange frequencies of the voice track. While in separation, the voice tracks are "smoothed" or combined with presence from the production environment to create unification and continuity during the mix process. Sound editor John Haeny (*Scent of a Woman* and *The Firm*) explains:

> Dialogue editing and mixing is about creating a continuous experience. The dialogue must seem consistent from take to take, scene to scene. It's like a play. It must be a continuous flow of the voice.[10]

The "flow" facilitates the narrative unity and image-sound suture. It is not surprising that the lead mixer deals with dialogue and supervises the integration of all of the other sonic elements around the voice. The voice is then meticulously deconstructed, only to be reconstructed to eliminate inconsistencies or technical ruptures so as to provide narrative intelligibility, enunciation, and stability. Both versions of *Blade Runner* elevate the voice through these processes. The original version, however, foregrounds the voice-over more prominently in the mix, offering it privilege over the other sound elements but leaving it the most vulnerable to exposure. In general, nearly every facet of the production and postproduction process regarding the voice elevates its importance and privilege within the Hollywood mode of production and accentuates the authority of the voice in establishing point of view.

AUTHORITY OF KNOWLEDGE AND ENUNCIATION

When Deckard is called in by his former boss, Lieutenant Bryant (played by M. Emmet Walsh), his status as an authority figure is called into question. Forcing him back into service to "retire" the replicants, Bryant tells Deckard, "You know the score, pal. If you're not cop, you're little people." Accompanying these lines on the visual track, Gaff (played by Edward James Olmos) makes an origami paper chicken, which he places in an ashtray. The figure becomes a clever comment on Deckard's reaction to coming back to the "job" and his status and place in the city. The image-sound construction reveals the moment to be part commentary, part threat. Later, in his voice-over, Deckard explains his fear of losing his authority: "I'd quit because I'd had a belly full of killing. But then I'd rather be a killer than a victim. And that's exactly what Bryant's threat about 'little people' meant."

The issues of authority and subjectivity pervade the film but also resonate in terms of contemporary theoretical discourse on sound, specifically in terms of gender. Male narrators dominate classical Hollywood cinema, positing "textual authority" with the male voice while containing the female voice within the diegesis.[11] In particular, the omniscient voice-over reveals a struggle for narrative control and point of view. It is a struggle between image and sound, as well as masculine and feminine. In many respects, the voice-over is considered a primary "carrier of meaning" for the filmgoer.[12] At stake in the image-sound model and the sound design as a whole is an ideological perspective, a dominant viewpoint in the cinematic representation. In this respect, the voice-over

in *Blade Runner* is the point of view for examining this cinematic world. As Silverman notes, voice-over (to varying degrees) "inverts the usual sound/image hierarchy; it becomes a 'voice on high,' . . . a voice which speaks from a position of superior knowledge, and which superimposes itself 'on top' of the diegesis."[13]

While not entirely a "voice on high," Deckard's voice-over in *Blade Runner* maintains a status of privilege and authority directly related to the unfolding narrative events, as is the case with many noir films. From the beginning of the film, he is established as a tracker, protagonist, and guide, presenting the narrative point of view and framing an understanding of action, characters, and events. His voice-over imposes a subjective viewpoint that is at times nostalgic, regretful, observant, and often analytical. In an early analysis of Gaff, he notes, "The charmer's name was Gaff. I'd seen him around. Bryant must have upped him to the Blade Runner unit. That gibberish he talked was city speak." Deckard's perceptions completely direct the narrative understanding of the dense weave of characters, images, and events. These observations supersede the costume design, lighting, and character blocking.

In the 1982 version of the film, Deckard's voice-over establishes a pattern of authority, direction, and enunciation that dominates the image-sound relations and foregrounds the detective and noir aspects of the film. The removal of the voice-over for the *Director's Cut* establishes an entirely new pattern of authority, direction, and enunciation that foregrounds the science fiction aspects of the narrative more fully, particularly focusing on the tensions between the human and the non-human. For instance, in the scene with Lieutenant Bryant, Deckard's voice-over characterizes Bryant's comments about "skin jobs" in terms of race; however, with the removal of this framing, the comment and its context stress the difference between the authentic (humans) and the synthetic (replicants).

The shifts are sometimes subtle, sometimes profound. In the first scene with voice-over, Deckard is seated just off the crowded street, reading the paper. He explains, "They don't advertise for killers in a newspaper." We learn that he is an ex-cop, a Blade Runner. He was married, now divorced, in light of the fact that his "ex-wife" still refers to him as "cold fish." In general, the voice-over offers some redundancy of the information in the scene. The verbal anchors presented are the reference to the newspaper and, of course, the recognizable voice quality of the actor Harrison Ford, both of which are reiterated and supported by the image track. The voice-over frames the character in terms of his backstory, his general attitude, and his job as an authority figure in the city. The

backstory can only be taken as truthful and authoritative, because there are no markers to indicate otherwise. The memories and information are not yet privy to revision as Rachael's backstory is when the story of the spider is revealed (Deckard exposes Rachael as a replicant by recounting to her one of her own private memories of a spider giving birth. It is revealed that the memory was "implanted."). By contrast, Deckard's subjectivity and insights at this early point in the film are far too stable for this type of inquiry. He is, therefore, deemed a reliable and authoritative narrator within the diegesis, offering a noticeably present tense account of events and actions.

Conversely, without the voice-over a much different pattern of character introduction and reliability emerges. The image and sound relations within the diegesis carry the narrative information, emphasizing the mise-en-scène and spectacle of the locale. The sonic environment presented is oppressive and immersive, which is a primary facet that has shifted the reading protocol for the blockbuster. In this dense cityscape, rain blankets the street and surrounds us in a swirl of atmospheric sound effects, including the flickering of neon, bustling crowds shuffling on the sidewalk, and snippets of media recordings. Deckard looks up silently and listens as an advertising blimp passes. The announcer calls to the masses below: "A new life awaits you in the Off-World colonies. The chance to begin again in a golden land of opportunity and adventure." The advertisement rhetorically poses the question, Why hasn't he gone? Why does he (and so many other city dwellers) remain in this oppressive environment? In addition, without the voice-over, he is a man without a background, without a family, and without purpose as yet. We don't know if he is a criminal or a cop. The advertising announcement above hints at his future by noting: "Use your new friend as a personal problem solver. . . . The custom tailored genetically engineered humanoid replicant designed especially for your use." When these replicants become the problem, we later learn that Deckard is the solution. During the course of the film, however, he becomes both problem and problem solver as his status as a "human" is questioned. For instance, without the voice-over, the only backstory presented for Deckard comes in the form of photographs on the piano in his apartment. Suspiciously, this collection resembles the one that the replicant Leon (played by Brion James) keeps in his rented room. The duplication is telling. We can never quite be sure of Deckard's authority or his reliability from what we have seen or heard.

In his encounter with Gaff, Deckard explains in his voice-over about the language difference or "gutter talk." This is described as a linguist

polyglot, a "mishmash of Japanese, Spanish, German, what-have-you." In this case, the voice-over frames the understanding of the events and the character of Gaff in terms of class. In Deckard's voice-over, Gaff is framed as a lower-class opportunist, working his way up through the ranks of police to the Blade Runner unit. Deckard's authority as narrator directs the thematic emphasis in regard to this issue. The deeper metaphoric implications are left unexamined as the perspective is unquestioned by the filmgoer. Without the voice-over, the implications shift in terms of the Gaff character and his status. The class issue is eradicated (though picked up somewhat in the costume design) and transformed into an issue of genetics and cultural blending. Gaff states, "Monsieur, ada na kobishin angum bi te." His words syncopate with hints of Japanese, Spanish, and German, while his visual presentation reveals an amalgam of different races and physical cultural markers from his skin tone to his goatee. Much like the genetic engineer Sebastian, Gaff is "decrepit." He limps forward, supported by a cane and flanked by his support team of officers. He is a blend of cultures and ethnic markers, and he represents the intersection of various human gene pools, definitely not engineered. He is a striking juxtaposition to the replicants and even Deckard. In a way, Gaff represents *us* (humanity), and in some way he is the true overseeing authority in the film. He leaves the telling origami markers (providing narrative comments on the action and about Deckard), and he offers the most directed narrative remarks related to Deckard's status as a Blade Runner and human. In the scene that introduces Gaff, the noodle vendor offers Deckard a translation of Gaff's initial inquiry: "He say you under arrest, Mr. Deckard." Deckard responds, "Got the wrong guy." But this is followed by, "He say you Blade Runner." This statement identifies Deckard's identity and position of authority (though, as yet, we do not know what a Blade Runner is). In addition, at the end of the film, Gaff offers Deckard a telling compliment: "You've done a man's job," thus subtly questioning Deckard's status as human. Gaff represents humanity in all its variations, yet it is Deckard and the replicants that ultimately hold our attention. Their stories and words serve as a mirror in which we can see ourselves. As with most examples from the science fiction genre, displacement of crucial themes and concerns are the primary methods employed to present critiques of politics and society.

In the 1982 version of *Blade Runner*, Deckard's voice-over and its authority over the narrative events are also supported by its redundancy in terms of depicting the events and actions on the visual track. When Deckard visits Leon's apartment, he presents his observations as he

works: "I didn't know whether Leon gave Holden a legit address. But it was the only lead I had so I checked it out." The image track supports the observations as Deckard and Gaff enter and search the apartment. In the bathtub, Deckard finds a reptile scale, which becomes a key piece of evidence in finding the replicants. In his voice-over, he poses questions about the investigation and makes realizations: "Whatever was in the bathtub was not human. Replicants don't have scales." Concurrently, all of these redundant observations become the filmgoer's realizations and perspective on the events unfolding. Our guide Deckard finds a stack of Leon's photos and notes, "And family photos? Replicants didn't have families either." Only later does Deckard realize the collection of photos squares with what Tyrell (played by Joe Turkel) told him about the replicants. They need the cushion of memories, even false memories, to deal with their emotions. In case we missed it visually, the same material is covered in the voice-over.

As demonstrated throughout, the credibility and stability of the voice-over is far from uniform throughout the film. Its tenuous status is most apparent and revealing at the end of the film. Following the game of cat-and-mouse with Roy Batty (Rutger Hauer), Deckard nearly falls to his death, only to be saved by the failing replicant. Deckard offers,

> I don't know why he saved my life. Maybe in those last moments he loved life more than he ever had before, not just his life, anybody's life, my life. All he wanted were the same answers the rest of us want. Where do I come from? Where am I going? How long have I got? All I could do was sit there and watch him die.

Ultimately, Deckard has no answers. His comments are classically noir in their inability to offer a definitive solution to the problem of the replicants and their return. Moreover, Deckard does not appear to have learned anything from the experience. He has taken no emotional journey into understanding his prey so he can understand himself. His credibility as our narrative surrogate is undercut substantially in this final epilogue. The mystery is left open-ended and unsatisfying.

Conversely, without the voice-over, the final moments with Batty and Deckard are far more profound, lyrical, and tragic. The lines spoken by Batty resonate without commentary as he states, "Quite an experience to live in fear. That's what it is to be a slave." The attention of the scene focuses not on Deckard but on Batty, dwelling on his voice, his narrative authority, and the poetic words that punctuate his death. The dramatic

FIGURE 9.2. *Blade Runner* (1982) Copyright © 1982 The Ladd Company. "I've seen things you people wouldn't believe." Removal of the voice-over by Deckard redirected the focus of this scene to the lines spoken by replicant Roy Batty (Rutger Hauer), charging them with authority and pathos.

tension and narrative enunciation of the scene completely shift. The object of scorn is revealed to be "more human than human," which is a key theme of science fiction that was picked up from early literary sources, particularly Mary Shelley's *Frankenstein*.

Batty states, "I've seen things you people wouldn't believe. Attack ships on fire off the shoulder of Orion. I watched sea beams glitter in the darkness at Tannhauser Gate. All those moments will be lost in time." In this final speech, Batty reveals his memories and his history so that Deckard honors and understands them, mourning their loss "like tears in rain." The authority and privilege of the voice is thus transferred from Deckard

to Batty. The moment also leaves open the issues of sympathy and identification. The filmgoer is left to ask, Does Deckard see himself in Batty? Do we see ourselves in him as well?

HUMAN OR REPLICANT: IDENTIFY YOURSELF!

After "retiring" Zhora (played by Joanna Cassidy), the replicant from the strip club in Chinatown, Deckard's voice-over notes, "The report would be routine retirement of a replicant, which didn't make me feel any better about shooting a woman in the back." Again, the character of Deckard is in crisis, questioning his job and his own authority. Thematically, the conflict is between the authentic and the synthetic, the human and the replicant. The word "retirement" takes the place of "execution," cushioning its real meaning. In her contribution to the anthology *Retrofitting Blade Runner*, Marleen Barr notes, "The euphemism is part of a metalanguage of discrimination directed against metahumans."[14] The creation of the replicants as slaves has brought about this conflict between simulacrum and the original. In *Megalopolis*, Celeste Olalquiaga extends this point by noting,

> [H]uman beings in *Blade Runner* have technologically replicated themselves to such an exact degree that their own existence is now endangered. Created as slaves, replicants develop in time the only feature that distinguishes them from their makers: emotions. Like all simulacra, replicants undermine the notion of an original by disavowing any difference between themselves and their creators.[15]

By foregrounding the commentary on issues of difference through the voice-over, oppression occurs in the categorization and labeling of the replicants as less than human (e.g., "skin jobs"). This distinction serves as a striking contrast to the Tyrell motto, "More Human than Human." Uncontrolled replicants are perceived as a threat to human authenticity, violating the unique nature of humanity and its freedoms, so these constructions must be "retired." In "Making Cyborgs, Making Humans," Forest Pyle argues,

> *Blade Runner* and the *Terminator* series not only reflect upon the threats to humanity posed by unchecked technological developments, they raise even more probing questions about the consequences of our definitions of the human.[16]

But the revisions in the two versions of the film bring into question who exactly is human and who is a replicant.

Rachael doesn't know her status until she is tested by the "Voight-Kampff" test, which measures degrees of empathy evoked by a subject during questioning. When she does ask whether Deckard has taken the test himself, he doesn't provide an answer. Because Deckard passes out, the filmgoer is left to assume he has just been hardened by his duties as a Blade Runner. The voice-over, in general, situates Deckard as human. As mentioned above, it reveals a backstory as it relates to his wife, his job, and his professional relations to Gaff and Bryant. Although the status of his voice-over is unstable at times, there are no markers to indicate that this background information is unreliable. In general, his descriptions and insights side with authority, the police, and the hunters of the replicants. Little ambiguity is left in terms of his allegiance to humanity. He even "rescues" Rachael in the end from her fate of "retirement." He explains, "Gaff had been there and let her live. Four years, he figured. He was wrong. Tyrell had told me Rachael was special. No termination date. I didn't know how long we had together. Who does?" His hero status is based on his ability to eradicate distinctions between high and low, replicant and human.

Without the voice-over and with the inclusion of the additional visual information, this process of identification for Deckard and all of the characters remains far more fluid and open, and the textual authority is thus diffused throughout the film in dialogue and the image-sound constructions. For instance, Leon's voice is utilized repeatedly to characterize and thematically reinforce events, punctuating the difference between human and nonhuman and drawing his voice into a position of textual authority. In the opening of the film, Leon is asked to talk about his mother. He says, "You want to know about my mother . . ." and then shoots the interviewer (the Blade Runner Holden) with a resonating gun blast. The question is never answered but is repeated throughout the film. No past is revealed because there isn't one. Leon's voice jumps to a position of privilege through the replaying of this encounter on tape by Deckard. The voice continually reiterates the metaphysical questions, Who am I? and Where did I come from? These ponderings of origins and identity are key questions for the replicants and the narrative.

Deckard, too, is obsessed with identification and identity. It is part of his job to assure he doesn't "retire a human by mistake." In voice-over, he exposes Rachael's identity and backstory. He notes, "Tyrell really

did a job on Rachael. Right down to the snapshot of the mother she never had. The daughter she never was." As with Leon, photographs are markers of history, memory, and identity, but, without them, there is no story, no identification. Deckard's voice-over about Rachael confirms this idea. Without the voice-over, Deckard has no story to *tell* either. His wife, his professional relations, and his backstory are wiped away. The pictures on his piano may be fake, may in fact be more planted memories.

On the level of dialogue, lines within the diegesis take on greater thematic resonance in terms of the issue of identity. Deckard asks Tyrell, "How can it not know what it is?" It is as much a reflection on Deckard as it is on Rachael. How can he not know who he is? In addition, Zhora asks Deckard, "Are you for real?" And throughout his final scenes, Batty's references to Deckard as a "little man" take on an ironic tenor. Crucial information exposing Deckard as a replicant comes from the Gaff character. At the end, Gaff states, "You've done a man's job, sir." Deckard is not a man, and Gaff knows it. The suggestion is that Gaff is privy to Deckard's mind, his memories, and his real identity. He tells Deckard on the rooftop, "It's too bad she won't live, but then again . . . who does?" This statement recurs at the end of the film in Deckard's memory as he and Rachael escape. It is accompanied by the discovery of the origami unicorn in the hallway outside Deckard's apartment. In his facial expression, Deckard instantly makes the connection to Gaff. The discovery signifies that Gaff let Rachael live, but the understanding goes deeper. The unicorn icon recalls Deckard's dream of the unicorn, which is the crucial footage added in the *Director's Cut*. In the reference to the dream, Deckard realizes Gaff has access to his memories, his dream, and his identity. How can he not know who or what he is? Deckard's expression becomes somber. The hunter is now the hunted. Deckard nods his understanding. Gaff's voice-off is laden with reverberation, thus elevating its status in the image-sound relation and cueing it as an interior recollection on Deckard's part. Ironically, it reiterates the fact that Gaff seems to have this ability not only to extract and observe memories but to plant them as well. Again, Gaff's authority is paramount in these instances and punctuates his status as a Blade Runner, privy to information beyond the realm of the "little people." The moment in the hallway for Deckard and Rachael ends with the chilling slam of the elevator door, which breaks narrative suture not only with these characters whom we have come to view as "human" but also with the film itself.

THE OPPOSITION OF VOICE AND SPECTACLE

The two versions of *Blade Runner* differ significantly in their impact in terms of sound design and cinematic spectacle. In the original theatrical release, the final mix of the film foregrounds the voice-over as the driving narrative force and aspect of audience identification. As previously noted, Deckard's voice floats above all the other elements in its authority and driving observations of the plot to impose an intellectual understanding of narrative events and character actions. This is perhaps one of the reasons why the film performed so poorly at the box office, bringing in only $27 million dollars in its initial domestic release.[17] The voice-over undercut the spectacle of the film's imagery and suppressed the rich musical score by Vangelis. In short, a competition between the voice-over track and the image track was created, which confused filmgoers. Thus, paradoxically, although the purpose of the voice-over was allegedly to give new clarity to the story, it actually ended up distorting it and undermining the visuals as well as the other components of the film's sound track. Conversely, the *Director's Cut* eliminates the voice-over and remixes the entire sound track, redefines the image-sound relations, and heightens their visceral impact and metaphoric significance. The music in particular is foregrounded, as are the ambient effects. These revisions encourage new reading codes regarding the nature of the film's image-sound relations as spectacle, stressing the lyrical and poetic aspects and offering a far more visceral and emotional experience for the filmgoer to navigate.

As already discussed, in the opening scenes Deckard's voice-over provides details of his background and establishes his authority as narrator. With its removal, the ambient effects and visual design dominate the scene. The blimp and its advertisement for the Off-World colonies are positioned more prominently within the sound track and the cityscape. As a sound effect, the voice of the advertisement announcer is processed with reverberations that offer spatial cues as to the environment, sending the words reflecting off the buildings and streets. Its complexity as a recording matches the complexity of the mise-en-scène, accentuating the spectacle. The spatial component of the image-sound construction is exploded rather than imploded as it is with the voice-over that draws the spectator identification into the hallowed consciousness of the character. Also, the sound of the foghorn places the blimp within the context of travel to the New World. The sound effect evokes nostalgia, recalling sailing ships, travel, and the spirit of "adventure."

The nature of the cinematic spectacle and its relation to this futuristic space is more fully exemplified in the next scene, in which Gaff flies

Deckard to the police headquarters in a hovercar. Without the voice-over, the spectacle of space, movement and flight overwhelms us in a new and sublime kind of cinematic pleasure. In *Terminal Identity*, Scott Bukatman argues,

> The scene provides, as does so much science fiction, a privileged tour of a richly layered futurity in a narrative moment which exists solely to present this urban space both bewildering and familiar. The city is sepia-toned and mist-enshrouded, a fully industrial and smog bound expanse which retains, in this sequence at least, some semblance of a romantic utopian impulse.[18]

The romantic impulse is strongly supported by the sound design that accentuates the notion of flight. The liftoff is initiated with the chatter of processed radio voices and jet engines, which propel the hovercar upward.

The sounds dissolve into the score by Vangelis, which features an orchestration of spectral voices, chimes, and synthesized tones. The music

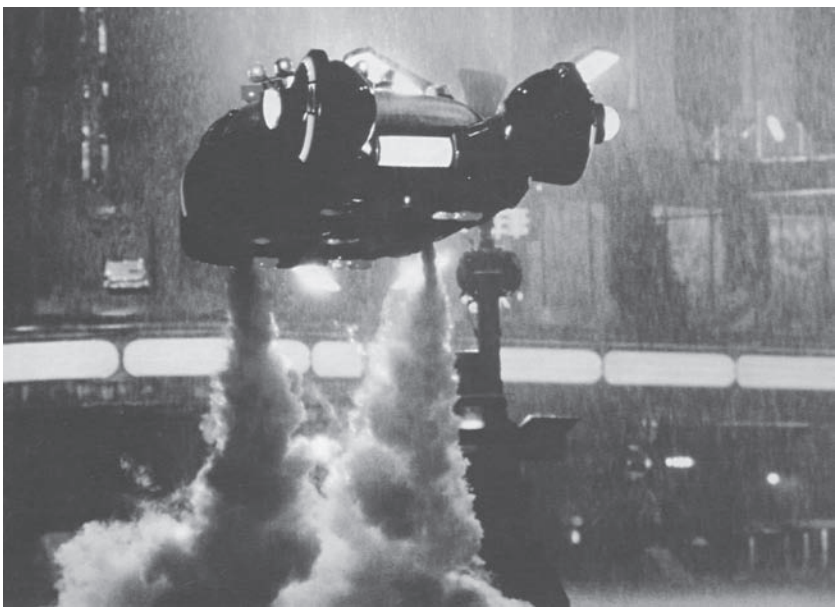

FIGURE 9.3. *Blade Runner* (1982) Copyright © 1982 The Ladd Company. The restored sound design for this flying sequence creates a symphony of the city for 21st-century Los Angeles.

carries the visceral impact of floating, soaring, and falling as it matches the movements of the hovercar. The composition blurs the line between sound effects and music, just as the mise-en-scène blurs any difference between the exterior and interior spaces. The spectacle of flight and movement is also accentuated as two other hovercars pass beneath Deckard and Gaff and the engines whir and slip by in a Doppler shift effect into the surround channels. The scene is framed by a radio-processed voice, a controller, guiding the hovercar into the station. The spectacle and grandeur overwhelm us viscerally and emotionally, setting the stage for this richly textured world. Bukatman notes that the filmgoer sees (and, I would argue, hears) how this future functions and participates in a "temporary alliance between technology and poetry, this mechanical ballet."[19] As with *2001: A Space Odyssey*, this film dances with the spectacle of flight and motion in the convergence of image and sound design. This is a symphony of the city for twenty-first-century Los Angeles.

CONCLUSIONS

It can be argued that science fiction stories are never finished, but are retold or reformulated in different contexts and different times to acquire longer life and deeper resonance. This constant state of reinterpretation is one the strengths of the genre. Ridley Scott's *Blade Runner*(*s*) represent(s) the power and impact of this continual state of revision and reevaluation (which, not surprisingly, also happens to be in synch with the industrial imperatives of contemporary Hollywood to facilitate ongoing revenue through sales and rentals of video and DVD, cable presentations, and theatrical re-releases). The two versions of the film are in constant dialogue with one another, each offering a different subjective and narrative experience for filmgoers. In terms of sound design, the two versions of the film are important because they provide a powerful example of the mutable nature and status of the voice in film sound and illustrate the differences in reading strategies (in both the areas of sound design and genre) that evolved in contemporary Hollywood cinema between the decades of the 1980s and 1990s. Undoubtedly, there will be another version of this film (perhaps remastered in a high-definition format with a remixed 10.2 sound track), and in this retrofit format and presentation, a new generation of filmgoers will be able to ask themselves, Where do I come from? Where am I going? How long have I got?

Part VI

Final Design

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10

Sound Mixing and Sound Design in Science Fiction Cinema

A MIXED PARADOX

ATTEND ANY FILM SCREENING these days in a major city like New York or Los Angeles and there will probably be a trailer for the THX sound delivery system, another for the specific digital format in which the film will be presented such as Dolby Digital, SDDS, or DTS, and, in some cases, a short vignette on an element of the film sound track such as Foley or the process of sound effects mixing. These trailers serve primarily as marketing tools and a means to differentiate theater exhibition from other venues. Each teaser, however, also reveals the constructed nature of film sound and its connection to spectacle in contemporary Hollywood cinema. The THX trailer, in particular, calls attention to the palette of film sound's frequency range from the very highest to the very lowest and also plays with the spectacle of sound movement by panning sound effects through the front and back of the exhibition space. Similarly, the format trailers accentuate the clarity, fidelity, and multichannel dynamics of the given reproduction medium, while the production vignettes, which in Los Angeles advertise the *Los Angeles Times Calendar Section*, often reveal the highly intensive mode of sound production. These trailers present a microcosm of issues related to the completed sound design. Image-sound relations, format choice, and sound localization are brought to the foreground and offered as a form of play within cinematic sound, yet these aspects of cinema sound are often left unexplored in terms of their inner workings or implications for filmgoing. They simply leave some filmgoers to recall one of the early THX trailers, in which familiar Simpsons characters, seated in a movie theater, brace themselves against the trademark THX music as eyeglasses and heads explode, and Grandpa Simpson yells in irony (sometimes with a chorus of filmgoers), "Turn it up!"[1]

In this chapter and the accompanying case study, I examine the inner

workings and implications of this cinematic play as it relates to film sound mixing, and I reveal the tensions that arise in the compositing and deployment of a film's final sound design. The process of mixing is somewhat of a paradox. On the one hand, the mix attempts to smooth over the various sound effects elements in relation to the image, creating a seemingly unaltered flow. At the same time, however, the mix of a contemporary genre film such as *Terminator 2: Judgment Day* tends to showcase the spectacle nature of the sound and its position within the theatrical space, exposing its difference from the image. In this chapter, I deconstruct the "work" of the sound mix to unmask both the forces that stabilize and balance the sound track and the equally powerful forces that threaten to rupture and expose its work. The sound mix is crucial to filmmakers and sound designers, because it allows a final layer of narrative control (and commentary), through isolation, refinement, and balance of sound elements. This layer of narrative enunciation was unavailable to films in the classical Hollywood cinema, which was, as I have already noted, limited by technology and format constraints. The mix of films today demands not only that we *listen* to the sound track differently (in digital formats and in surround sound); it also demands that we *hear* them differently, particularly with a greater awareness of their self-reflexivity, narrative importance, spectacle qualities, and, finally, their relationship to genre.

The accompanying case study of *Terminator 2: Judgment Day* (1991) draws together many of the sound design issues previously explored in this study (from sound effects creation to the manipulation of the voice) and examines their overall relationship to the codes and conventions of the science fiction genre. This case study not only offers a unified analysis of a particular sound design but also presents a model and method of analysis that can be applied to any film or genre within any national cinema. Although a description of the specifics of the sound mix is not the primary objective here, these final chapters figuratively offer an opportunity to get behind the mixing console to tinker with the ideological, generic, and theoretical layers of the sound track and ultimately examine their deployment and influence on sound design.

THE PARADOX OF MIXING

In this final stage of sound construction and design, a paradox arises. Specifically, the sound mix seeks to be self-effacing through the manipulation of volume levels, uniform placement of sound elements, and an attentiveness to image (in terms of scale, synchronization, and content);

yet the sound mix also calls attention to the sound design as a construction and form of spectacle through the manipulation of sound perspective, anthropomorphism, and localization of sound elements within the exhibition space. In other words, mixed sound strives simultaneously to be both invisible and overt. In many ways, this tension is akin to the use of (and reaction to) computer-generated images (CGI) in contemporary genre films such as *Terminator 2: Judgment Day* and the *Lord of the Rings* series. As Geoff King notes, CGI can "be experienced simultaneously as 'highly realistic and convincing' and [also] as 'amazing illusions of the highly realistic and convincing.'"[2] Audiences must then learn to navigate and find pleasure in both the act of being drawn into the narrative by these effects and the act of observing the effects as illusions.[3] Sound design accesses and offers these same intents and pleasures.

For filmgoers, the deployment and reception of mixed sound is often characterized by interplay between spectacle and suture, and it is genre and narrative dynamics that often mediate the balance between these two aspects of reception. Genre films have been particularly adept in this process, using style, narrative considerations, and audience expectations to bridge the gap. For instance, in the trailer mentioned earlier, it is the film form of animation (in the comedy and action/fantasy genres) that holds the paradox in check. Specifically, the Simpsons' THX trailer, with its exploding heads and shattering eyeglasses, showcases traditional animation (with comedic elements), whereas the Dolby Digital trailer employs CGI shots of helicopters strafing a cityscape (action film and fantasy iconography) to showcase its sound developments and capabilities.

In such instances, genre considerations and reading protocols are transferred to the process of sound mixing and design to construct and unify the cinematic event. It is within this paradox that contemporary film sound gains greater mobility in terms of aesthetics, narrative construction, and production of meaning, expanding the reach of film sound further than ever before. For example, in the opening sequence of *Terminator 2: Judgment Day*, Sarah Connor (played by Linda Hamilton) recounts in voice-over the war with the machines, which has left the landscape of Los Angeles in the year 2029 A.D. devastated by nuclear fallout. The camera passes over a playground of twisted metal and bones before centering on a human skull, and just as the voice-over drops away, a terminator foot enters the frame and crushes the skull with a sickening thud (and crunch). As Gianluca Sergi notes in "A Cry in the Dark: The Role of Post-Classical Film Sound," this particular sound design is "used both to startle the audience and to convey the mightiness of the struggle awaiting the humans in their

FIGURE 10.1. *Terminator 2: Judgment Day* (1991) Copyright © 1991 Carolco. Sarah Connor's voice-over provides both spectacle and specter as it foreshadows the struggle between man and machine in *Terminator 2: Judgment Day*.

fight against the machines."[4] Both genre themes and cinematic effects are engaged in this example, and, as Sergi aptly points out, "the sound 'breaks through the screen' and takes centre stage."[5] It is both spectacle and specter.

IDEOLOGY AND TRANSFORMATION

In "Ideology and the Practice of Sound Editing and Mixing," Mary Ann Doane examines these key processes in relation to the notion of effacement in classical Hollywood cinema. She argues that traditional production practices are rooted in an ideology of the image, which encourages filmgoers to observe rather than examine, to naturalize rather than analyze, to look rather than listen as a means of understanding.[6] In addition, in the language of sound production, there are sanctioned attempts to separate image and sound in terms of how they are conceptualized and conceived by practitioners. These approaches are often affirmed by "behind-the-scenes" accounts and publicity. Emotive terms like "mood" and "atmosphere" are used to describe and subsequently deemphasize

sound processes, whereas the image is framed in terms of intelligibility and knowledge.[7] The language separates sound (in particular sound effects and music) from possible analysis, leaving it mysterious and intangible but at the same time acknowledging its importance in the production of meaning.[8] This is perhaps one of the reasons why film sound studies have been so neglected until recently.

Ironically, the distinction in film language is countered by a vigorous attempt by sound personnel to unify disparate image and sound constructions through a battery of sound production practices and processes. Heterogeneity is vigorously denied. In general, the effort to construct sound-image unity incorporates a host of technologies, including mixing consoles, pieces of "outboard gear" operating in the frequency, level and/or time domains, patch bays, reverb chambers, and the like. In digital editing, software "plug-ins" offer these same effects in digital form without the "gear." Techniques from dialogue editing to gradual level changes from shot to shot also "promote a sense of effortlessness and ease in capturing the natural," and, thus, sound becomes "silent" support for the image.[9] In the schism between language and practice, however, there does exist the constant potential for rupture through many factors, including the voice (as demonstrated in the chapter on *Blade Runner*). As a result, a constant balancing act must occur to keep the ideology in check. The carefully orchestrated mix becomes one of the key means of creating that balance. Ultimately, as Doane argues, it drives classical Hollywood cinema toward an aggressive eradication of postproduction work as a means of maintaining the dominance of the image.[10]

In true science fiction fashion, though, this ideology has been assimilated and transformed in the era of multichannel sound design. As this study has shown, sound's status within the cinematic model has evolved significantly since the late 1960s and in many instances rivaled the image for the filmgoer's attention. Filmmakers and filmgoers alike are no longer satisfied with sound that is subservient to the image. Filmgoers have developed new expectations in terms of the blockbuster and genre fare, particularly the science fiction genre. Audiences are now demanding state-of-the-art sound technologies and sound designs that match the innovative special effects that companies such as Industrial Light and Magic (ILM), Digital Domain, Weta Digital, and others are providing. As a result, sound design is a far more aggressive, overt, and active participant in the production of meaning and transmission of knowledge from core elements of music, effects, and dialogue to localization of effects within the theater space.

The drive toward effacement is still present in techniques such as dialogue smoothing, the elimination or filtering of inconsistencies, and the balancing of sound levels. But new factors brought on by multichannel sound formats and new expectations in blockbuster cinema have driven sound design into the realm of spectacle, metaphor, and immersion. There are, nevertheless, challenges within this paradox. For filmgoers, reading codes face constant realignment and reconsideration, and filmmakers must navigate issues of suture and suspension of disbelief in designing their sound tracks. They must constantly address the most important question related to mixing: How much is too much?

In *Sound for Film and Television*, Tomlinson Holman aptly codifies one of the primary issues faced in mixing for blockbuster films. Addressing the distinctions between image and sound perception, he writes,

> An example of vision dominating sound in film is the "Exit Sign" effect. In *Top Gun*, when jets fly left to right across the screen and then exit screen right, what may be perceived aurally is the jet flying off screen as well, right into the exit sign. In fact, the film sound system does not have the capability to accomplish this effect technically, but it is nonetheless perceived due to vision overwhelming auditory spatialization.[11]

The influence of sound localization demonstrates the ever-present potential for rupture between the visual and auditory tracks, and the implications are sometimes devastating. Holman notes, "Mismatches between position of a sound source visually and aurally do cause cognitive dissonance, which tends toward limiting the suspension of disbelief usually sought."[12] So a constant navigation between image and sound must be maintained in terms of their contributions to meaning production and suture. In short, a mixer must be attentive to not only the limitations of the format medium of a particular film sound track but also those limitations of the filmgoers and their perceptions as they evaluate that same sound track in the theater. Mixing by its very nature is a means of creating balance, and, in the era of sound design, that balancing act is far more complex than ever before.

EFFACEMENT THROUGH "ALLOWABLE RELATIONSHIPS"

As demonstrated, the difference between image and sound as conveyers of meaning has the potential for creating instability in the sound-image

model; however, Doane notes, "[p]ractices of sound editing and mixing are designed to mask this contradiction through the specification of allowable relationships between sound and image."[13] According to Doane, in the classical Hollywood cinema, these allowable relations included maintaining consistent levels between various shots to ensure continuous flow and diminishing sound inconsistencies by avoiding abrupt sound cuts on the frame line. This "work" of self-effacement has become even more substantial and deft in contemporary films such as *Terminator 2: Judgment Day*, which is considered by many sound personnel to be one of the best mixes in contemporary Hollywood cinema. Sound designer Gary Rydstrom comments,

> The challenge [of the film] turned out to be more in the mixing than the creation [of effects]. You have the dialogue, the music, and the larger-than-life sound effects all thrown together. That's where a lot of creative choices had to be made to give it a flow and some dynamic shape, so you weren't bombarded by sound.[14]

In general, one of the primary aims of the sound mix is to eradicate any inconsistencies in terms of recording quality so as to provide a continuous flow. Many techniques and technologies are employed to achieve this end. Dialogue, for instance, is meticulously smoothed with sound presence from the production environment. For this process, sound editors separate dialogue tracks in a checker board of fragments (ADR, production dialogue, and wild recordings), but leave as much room presence from a scene on both sides of the recorded lines. Room presence may also be sampled in a computer and laid under ADR tracks, which are recorded without presence. Subsequently, when the dialogue tracks are mixed down, the dialogue mixer uses skillful crossfades of the presence to cover any inconsistencies and maintain the illusion of continuous dialogue. The ambience effectively serves as a through line for the dialogue. Holman evokes Gestalt theory to explain this technique as the principle of "good continuation."[15] Sound in effect flows unhindered by sonic distraction, distortion, or self-conscious reflection.

This technique is used extensively in contemporary cinema to eradicate jarring transitions between ADR and production recordings and promote intelligibility on the dialogue track. In *Terminator 2: Judgment Day*, this principle is played out in the initial hospital scenes in which Sarah Connor (played by Linda Hamilton) is watching herself on video recounting her stories of nuclear annihilation. The dialogue mixer (Tom

Johnson) moved skillfully between ADR recordings and production recordings of the actress through a series of crossfades, equalization and ambient cover. Johnson notes, "The editors give me handles on both sides of the line, and I just have to do a bunch of crossfades to make it sound like it was recorded by a microphone in one take."[16] This process of smoothing pervades the film, because, according to sound supervisor Gloria S. Borders, more than 70 percent of the dialogue and breathing in the film was replaced through looping.[17]

Effacement also occurs in the sound mix when voices are equalized and processed from scene to scene to reduce recording noise and provide consistency in voice texture.

Throughout *Terminator 2: Judgment Day*, the voice of Edward Furlong (the teenage actor who played the young John Connor) changed over the ten-month shoot because of the onset of puberty, and, as a result, the mismatched production and ADR recordings had to be pitch shifted from scene to scene, using a device called a Lexicon 2400, "which will actually speed up or down a tape machine, or whatever [the voice for instance], and pitch it accordingly [while keeping the duration of the effect correctly synchronized]."[18] The effect assured continuity, giving the voice a consistent character and hiding any frequency changes. Similar techniques of effacement are often used for the sound effects and music tracks as well. Ironically, the best sound work is often considered the least noticeable.

CONFRONTING THE WORK OF SOUND

But can the work of the sound track processes and practices ever be entirely eradicated? In this age of sound design and spectacle, the work of the mix cannot be truly eradicated, nor does it want to be entirely. According to John Belton,

> [W]ork, even the work that seeks to efface itself, can never disappear. A fundamental law of physics tells us that energy, though it may change form, can be neither created nor destroyed. Neither mass nor energy nor work is ever lost. Similarly, technology and the effects of technology—by which I mean the aesthetics and stylistic practices that grow out of it—remain visible.[19]

Or, in this case, audible for those who listen and evaluate the nature of the film sound track. Although some mix practices seek effacement, the work of postproduction is at times purposefully self-conscious of its own

construction as a means of contributing to the sound spectacle or production of meaning. If fact, the term "sound design" offers the conflation of the aims of effacement and spectacle. Whereas classical Hollywood cinema sought to provide sound that was "natural" and "real," invisible in many respects, contemporary sound design engages the codes of the "real," yet also presents aesthetic constructions that are at times self-reflective and overt in their use of techniques of spectacle. It is this paradox that the science fiction filmmaking embraces and encourages.

New sound technologies and formats such as multichannel, for instance, have become part of genre expectations in science fiction cinema. In terms of reading codes, new image-sound relations demonstrated by multichannel formats offer new visceral, emotional, and thematic implications. As with the sound trailers discussed at the beginning of this chapter, the employment of these new formats brings on the project of formal cinematic play, such as spectacle of movement, sound localization, and others. But what specifically is the nature of this work in terms of the mix and what are the implications of it in terms of sound design?

THE MIX PROCESS

The actual production work on any mix is extensive, grueling, and often scheduled around the clock to meet a film's release date. For *Terminator 2: Judgment Day*, the re-recording process began at Skywalker Sound, in San Rafael, California, on May 23, 1992, and was completed on June 21, 1992.[20] This intensive four-week process involved a series of predubs of nearly 2,000 units (or tracks) of dialogue, music, and effects, which were folded down to create a six track master for the 70mm print of the film.[21] In general, using the master 70mm print sound stems (or the related but separated strands of the final mix, which include the dialogue, music, and effects), various other format versions of a film are created from the Dolby Stereo optical prints to the television versions. This effectively saves money when it comes time for the film to play in alternative venues such as second-run theaters, foreign theaters, or aboard commercial aircraft.

As is the norm, the film used three mixers: Gary Rydstrom, who dealt with effects and the overall sound design, Gary Summers, who worked with the music, and Tom Johnson, who mixed the dialogue. Using preprinted cue sheets like a sonic script, the mixers meticulously worked through each reel of the film and the voluminous sound elements, summing the parts into the continuous channels of film sound. Though part of their job was to eradicate inconsistencies in recording quality and

achieve the flow of dialogue and effects, they did not entirely erase the work of the mixed sound. Their conceptual approach was to maintain the codes of "realism" for film sound as well as establish cinematic spectacle and sound objects that engaged the mode of science fiction. As Rydstrom explains,

> Your first thought when you see a lot of special effects is that sound's job is to not only do something as fantastical as the visual, but also to make it real.[22]

In a science fiction context, Rydstrom brings into focus the balance of self-effacement and spectacle. He codifies this approach as "hyper-realistic," noting "everything is big, and you can make it movie-sized."[23]

Within this conceptual framework, a balance must be struck to create the final sound design. The issue of image-sound credibility, or the right "fit," comes into play. As discussed earlier, what makes the sound credible is its adherence to past sound codes and physics of the imagery. For instance, spatial cues such as reverberation and reflections on footfalls of the Terminator (along with the clink of boot chains and squeaking of leather) serve as anchors to bind sound and image. Conversely, what makes the sound "fantastical" or more than "real" are the conceptual applications of sounds, brought about through privilege, sound perspective, anthropomorphism, and spatial placement. Throughout the entire sound track of *Terminator 2: Judgment Day*, many of the Foley sounds such as the footfalls and leather squeaks are so cleanly recorded, detailed, and evocative that they seem to float over all of the other aspects of the diegesis. They fetishize the precision and mechanical nature of the Terminator; therefore, these effects function in two ways—to provide a practical anchoring of the character within the scene and to create a metaphor of mechanization (and its perils).

THE LAYERS OF SPECTACLE

One of the functions of the mix is to create various layers of sound enunciation. Walter Murch explains that he always works in "layers of three," presumably foreground, middle ground, and background.[24] In this age of multichannel exhibition, he has, however, revised this to five layers. The idea is the equivalent of deep staging in terms of mise-en-scène, yet brought to the level of sound. In *Terminator 2: Judgment Day*, the final sequence, which takes place in a steel mill, features multilayered

elements of dialogue, music and effects in the traditional hierarchy of film sound. The music carries the crash of the tanker truck, the sound effects punctuate the impact and signal the danger as an alarm is tripped, and the dialogue relays the critical and volatile nature of the crash and spill as a worker yells, "Get the hell outta here!" In relation to the narrative, the combination offers a sonic landscape of the location, action, and objects of narrative significance. This balance of elements, though, can shift radically to emphasize one element over another or all others. This is the nature of the mix—to focus and direct attention.

When the Terminator (Arnold Schwarzenegger) shoots the T1000, which has been frozen by liquid nitrogen, the balance of sound changes radically. The ambient noises of the steel mill drop away completely, thus emphasizing the silence—a feature that the digital format is uniquely qualified to handle because it does not carry the noise artifacts that analog sound formats do. The mix strategy carries through with this emphasis and stresses only the firing of the gun and then the shattering of the T1000. The spectacle of variation between loud and soft is showcased in this sequence, playing on the physiology of the filmgoer by dipping sound levels then juxtaposing them with a crash of sound. This psychoacoustic effect heightens the perception of volume. As Rydstrom explains, "Dropping out sounds is a big element in making a sound hyperreal. The sound itself is important, but it's how you mix it and how you focus in on it [which makes the sounds 'bigger than life']."[25]

This same technique is used when the Schwarzenegger Terminator jumps his motorcycle off the LA aqueduct in pursuit of John Connor. The sound drops out, emphasizing the spectacle of flight and then the impact. Thematically, the privileging of sound often offers metaphoric implications. Throughout the film, sounds of metal are associated with machines and mechanization. This sound sequence reveals the Terminator's mastery over the mechanical, specifically weaponry, vehicles, and the T1000 Terminator. It sets him in opposition to the humans in the film, Sarah Connor and her son, who seek to master emotion and save humanity from the machines. Ironically, it is only when the Terminator gains an understanding of emotion ("I know now why you cry") and sacrifices himself that the project of saving humanity can be achieved.

MIXING IN METAPHOR

Metaphoric implications are also overtly evident when mixing and editing practices call attention to sound through anthropomorphism. This

technique, which is commonly used in animation when inanimate objects come to life with human or animal qualities, has been extended into the realm of sound. In the steel mill sequence of *Terminator 2: Judgment Day*, the molten pit of metal comes alive with the screams and screeches of various animals when the T1000 falls in and can no longer hold its shape. These organic sounds are re-recorded with inorganic sounds of metal scraping against metal and liquid being splashed. The conflating or summing of these disparate elements questions the combination of the natural and synthetic, which reaches into the thematic conflict in the film. The film constantly questions the implications of merging organic with the mechanical. This is one of the key anxieties of science fiction and in fact the modern technological society.

In this same scene, the mixers emphasize another spectacular aspect of contemporary blockbuster cinema, the availability of sound fields (or quadrants) within the theater space. Within multichannel theaters, these fields are dominated by different speaker channels and positions, specifically left, center, right, right surround, left surround, and subwoofer channel. In the shots of the molten metal pit, the screeches and particularly the splashing of the T1000 whip through the surround channels in a spectacle of sound movement and localization. On the reaction shots of Sarah on the scaffolding above, the surround sound falls away. The sound alternates between a wide pattern of dispersion to a narrow one. Of this technique, Rydstrom notes, "You can shift focus on a cut instantaneously and it has the effect of a Godard jump cut. There's something that shocks you and jumps you into the next sound."[26] The attentiveness to movement and the surround channels call attention to the work of mixing. The sequence is also important metaphorically. As the T1000 disintegrates, it attempts to run through all of the patterns that it has sampled—so we see the faces of the foster parents, Sarah, and others. It is an attempt by the machine to be omnipresent as it had been throughout the narrative, but in the end, it is left only to dissipate into nothingness. This nothingness translates into the eradication of the future war, the nightmares of nuclear destruction. Place and time collapse, and the future is once again uncertain.

IDENTIFICATION: SUBJECTIVITY AND SUTURE

The processes of mixing and spectacle also have implications for point of view and subjectivity. At several points during *Terminator 2: Judgment Day*, the visual track accesses the Terminator's mind—offering an overlay

of grids, menus, and analytical data. On the sound track, the hum of a CPU and the sounds of data processing are featured. These sequences offer both a visual and, more important, a sonic point of view, or, as Altman has aptly described, a "point of audition."[27] However, more subtle shifts can be found by examining mixing and recording patterns. In *Terminator 2: Judgment Day*, one of the most significant sound facets is that of weaponry. Thematically, weaponry is aligned with the mechanistic and the fragility of humanity. For instance, Sarah Connor almost becomes a machine when she takes up weapons against computer designer Miles Dyson (played by Joe Morton). The music sound track even plays the leitmotif previously reserved for the Terminator attacks. This scene, however, represents a nontraditional method of mixing weapons fire and a shift in sound subjectivity and, subsequently, the filmgoer's identification.

Rather than emphasizing the actual firing of the weapons, the sound mixer emphasizes the impact of the bullet hits on objects. The hits are recorded in a pristine manner and in close perspective, shifting subjective emphasis from the weapon's fire to the results of the bullet impacts. This shift is especially evident when Dyson is shot. The visceral impact (accompanied by a slow-motion shot) is overwhelming for viewers and the character of Sarah Connor, who realizes the moral implications of her actions and she collapses before actually killing Dyson. A perceptual matching has occurred. Moreover, the shift in subjectivity reinforces a sound pattern that comments on human fragility in juxtaposition to the rigid and impenetrable nature of machines and metal.

In other sequences in the film, the sound design emphasizes and even fetishizes the sounds of gunfire and projectiles as well as their impact. In these instances, the close microphone perspective offers a sonic point of view of the weaponry and their projectiles, with which the filmgoer is forced to identify.

One instance occurs in the attack on the police at the Cyberdyne complex; the Schwarzenegger Terminator uses a grenade launcher. The editors and mixers carefully break down the use of the armament, from the loading of the shell to the dry-fire noise, firing, movement through the air, impact, and explosion. The sounds are recorded in close perspective, their fidelity is clear and resonant, and they carry above the fray of other sound track elements. Subsequently, filmgoers are sutured into the process via the auditory specificity and localization. The sonic point of view of the projectile is paramount in "selling" the effect. It is in the layers of detail that the spectacle achieves its visceral impact and suture. The specificity goes far beyond that of a simple gunshot (a familiar sound

FIGURE 10.2. *Terminator 2: Judgment Day* (1991) Copyright © 1991 Carolco. The sound mix for the film emphasizes the trajectory of weapons fire and the impact of bullet hits, creating a shift in audio subjectivity.

effect of the classical era). The implication is a deepening sense of connection to weaponry, as if it is a character within the diegesis rather than merely a prop. Weapons, then, become an extension of the Terminator machine and its destructive subjectivity, and the filmgoer is implicated in this position through the recording and mix processes.

CONCLUSIONS

There is no single answer to the paradox of the sound mix, partly because there is never a single mix of a film. The diversity of different venues

and formats in the domestic market alone necessitates the creation of multiple sound tracks for the same film. The plenitude of sound trailers identifying the different sound format brands belies this point. The current predominant digital formats alone include Dolby Digital, DTS, and SDDS. Each format requires different technical and aesthetic considerations to which the mixers must remain attentive. A mix for the SDDS format features two additional sound channels, which can be used independently of the other channels. Conversely, if we take a step down from these digital formats, a Dolby Stereo optical print would not feature split surrounds but instead relies on a matrix to divide sound information between channels. In this instance, mixers would need to be aware of problems caused by sounds inadvertently thrown into the surrounds by the matrix. Such effects may have to be excised in the final mix. Thus, the search for the definitive mix or the definitive version of a film, for that matter, is extremely elusive, and the mix paradox resonates throughout. If, however, the underlying techniques and principles of the mixing "work" are exposed (as was the goal in this analysis), the investigation of the sound design is made much easier.

A detailed case study of *Terminator 2: Judgment Day* concludes this section. This final investigation deals with the overall planning and the patterns of this specific film sound track and how the final sound design emerges, drawing together issues of recording, editing, mixing, genre, and reception. Although *Terminator 2: Judgment Day* represents a relatively conservative sound design in terms of aesthetics, it signaled a new direction in contemporary Hollywood cinema into the digital era, laying the groundwork for advances in CGI, the use of digital audio workstations for sound editing and mixing, and the integration of digital recorders into the production process.

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Mixing Man and Machine in *Terminator 2: Judgment Day*

FEATURE—*T2*, REEL 1: Freeway ambience, laughter of young girl, movement of chain swing, playground ambience, flash flare, explosion, metal creaking, desolate wind.

SPOTTING NOTES LIKE THESE represent a detailed list of vital sound effects needed to build the sound design for a reel of film. The descriptions read like poetry and refer to a sound library or sound effects wants list. If a sound is unavailable, it is designed. If the sound quality is not right, it is processed, edited, and remixed. From the spotting notes, the sound designers explore the motifs and metaphors of a sound track before a single sound edit is made. The opening sequence of *Terminator 2: Judgment Day* (1991) establishes a number of sounds that will run throughout the film from rhythmic movement of metal to the desolate wind of Judgment Day.

The goal of this case study is to analyze the composite sound design of *Terminator 2: Judgment Day* and explore integration and implications of the film's various sound components, including the ambience, dialogue, music, Foley, and sound effects and their relationship to the codes and conventions of the science fiction genre. Although the title of the film implies an allegory of Armageddon and a binary conflict between man and machine, the narrative and the sound design support a more complex and transgressive project, which ultimately explores the interpenetration of man and machine and the consequences that result from this mixture. At the site of contact, metal and bone collide, gender differences collapse, language and data combine, and humanity and programming clash, raising questions about the myth of utopia through mechanization

(a concern that reaches back to the beginning of science fiction cinema with the release of *Metropolis* in 1927).

AMBIENCE: THE WIND OF JUDGMENT DAY

The opening sequence of *Terminator 2: Judgment Day* offers the most significant use of ambience in the film. After the flair of a nuclear explosion, the ambience of wind comes in, and the camera reveals a devastated Los Angeles in 2029 A.D. The ambience is sweetened with the sound of sand and dust playing across various surfaces, metal, and bone. Contrast this with the prior sound effect of a young girl's laughter and the juxtaposition is telling. The future represented by the child's voice is wiped away by the impact of a manmade technology, a nuclear weapon. In her voice-over, Sarah Connor invokes the religious prophecy of "Judgment Day" to describe the event. (This also serves as an intertextual reference to the first *Terminator* film from 1984, which describes the war as a "storm.") These are the sounds of Armageddon. Vivian Sobchack notes one important aspect of wind in the science fiction genre:

> [T]he sound of natural forces which are usually out-shouted in modern life by man-made noise, natural forces like the wind . . . are made alien and threatening by the amplification and isolation of their sound on the track—crashing surf, screaming wind, both become aural icons, metaphors for extreme desolation.[1]

Terminator 2: Judgment Day offers a unique extension of this metaphor. In the opening sequence, the application of wind collapses both the natural and the manmade, which is one of the central projects of the film. In its production, the recordings of wind were sampled by a computer and "performed" off a Synclavier system and keyboard, offering the convergence of the organic and the technological.[2] In terms of the narrative, the wind (the natural) is created by the shock wave of a nuclear weapon (the manmade). The environment is charged with the ultimate mechanical device that uses nature (atoms) against itself. Later, the narrative traces this collapse in its entirety in Sarah's dream. In her dream sequence, the camera follows the blast wave through the city, across freeways and office parks to this same playground. Here, the ambient wind is transformed into an angelic choir of voices (again invoking the religious connotations). The blast of wind is so powerful it breaks apart the children like "leaves" and with them the future of humanity. Throughout the film, the

site of contact between the natural (generally human), and the manmade is one of extreme violence.

The ultimate violence denoted in this opening sonic movement is Armageddon, clearly a dystopian vision of the future. Or is it? In "Progress Versus Utopia; Or, Can We Imagine the Future?" Fredric Jameson argues that science fiction does not offer visions of utopia or dystopia; rather, it offers "to defamiliarize and restructure our experience of our own present."[3] He states that "such narratives have the social function of accustoming their readers to rapid innovation, of preparing our consciousness and our habits for the otherwise demoralizing impact of change itself."[4] *Terminator 2: Judgment Day* certainly supports this idea.

This opening sequence is only a dream, an envisioned prophecy that Sarah Connor carries with her. Her prime motivation is to prevent this possible future by manipulating the present, yet her identity is almost lost as she nearly becomes the object of her scorn. Like a cyborg Terminator toting heavy weapons and clad in synthetic armor, she almost kills Miles Dyson, the inventor of Skynet. By the end of the film, it is ambiguous whether she has in fact achieved her goal of altering the future timeline. Her dystopian vision has been wiped away, yet no vision remains in its place, only the present and "the unknown future." The open road becomes a metaphor for the possibilities that lie ahead.

Ironically, the director of the film did try to imagine (and even shot) a vision of a utopian future. It was meant to be a "bookend" to the opening sequence. The scene can be seen in the "special edition" of the film, yet only as an addendum, following the film in the supplementary section. The scene is set in a playground in a futuristic Washington, D.C. There is no wind, only the voices of children chattering and playing. Sarah Connor, now sixty-four, watches her son John Connor (a senator) push his young daughter on a swing set. In voice-over, Sarah tells her story:

> August 29, 1997, came and went. Nothing much happened. Michael Jackson turned forty. There was no Judgment Day. People went to work as they always do, laughed, complained, watched TV, made love. I wanted to run through the streets yelling, to grab them all and say, "Every day from this day on is a gift." Instead, I got drunk. That was thirty years ago. But the dark future, which never came, still exists for me and it always will like the traces of a dream. . . . John fights the war differently now than was foretold, here on the battlefield of the Senate. His weapons are common sense and hope.

> . . . The legacy of hope was given to me by a Terminator, because if a machine can learn the value of a human life, maybe we can too.

The scene was cut, and the end of the film revised to leave the future more ambiguous. Some of the language from this scene, however, was picked up in the sequel *Terminator 3: Rise of the Machines* (2003), but the lines are spoken by John Connor in the lead up to the war.

VOICE-OVER AND DIALOGUE: AUTHORITY, MIMICRY, AND INTERTEXTUALITY

> SARAH CONNOR: (voice-over) Skynet sent two Terminators back through time. Their mission—to destroy the leader of the human resistance—John Connor, my son. The first Terminator was programmed to strike at me in the year 1984 before John was born. It failed. The second was set to strike at John himself, when he was still a child. As before, the resistance was able to send a lone warrior, a protector for John. It was just a question of which one would reach him first.

Throughout *Terminator 2: Judgment Day*, a voice-over by Sarah Connor provides backstory, enunciation and narrative authority to the various events within the diegesis. Voice-over in itself is not uncommon in the science fiction genre (or to Hollywood cinema). Historically, however, most voice-overs have been engendered as male. As noted earlier, noir cinema is rife with such examples. In her analysis of classical Hollywood cinema and the genre of film noir, Kaja Silverman notes that "a complex system of displacements . . . locate[s] the male voice as the point of apparent textual origin, while establishing the diegetic containment of the female voice."[5] The voice-over in *Terminator 2: Judgment Day* transgresses this project to some degree, establishing Sarah Connor outside the diegesis in some other space and time, which is indicated by the use of the past tense and the recording of the voice without geographic or temporal indicators of any kind.

With the inclusion of the voice-over, Sarah's authority directs the point of view of the narrative and shapes the filmgoers' identification with her character. At the same time, however, her voice is rendered unstable as it is forced into containment throughout the film by technology. This instability once again recalls the use of voice-over in noir cinema. In the

omitted ending of the film, the voice-over is discovered to be on tape, just as in the first film. Ostensibly Sarah is making the tapes for her son, John, so that he may understand her trials with the Terminators. This project, however, is subverted in the sequel. In the mental institution, Sarah is forced by the psychiatric personnel to hear, see, and endlessly confess her dreams of *Judgment Day* on videotape. Her voice screeches into the theater as she screams into the microphone. The scene mixes irony and pathos as it mobilizes doubt about Sarah's sanity and questions her voice of authority by containing it within technology as evidence against her. It is as if even she were being forced to disbelieve her own testimony. The voice becomes a form of sedation and rejection of truth, but there is subversion here. Dr. Silberman (played by Earl Boen) realizes it: "I think you're just telling me what I want to hear." His mistrust is a reference to the first *Terminator* film as well, because Silberman was also the psychiatrist who called into doubt the sanity of Kyle Reese, Sarah's first protector and John Connor's father.

Sarah's voice as the authority is constantly in conflict with the machinery in the film. At one point, her voice is even stolen by the T1000 Terminator (played by Robert Patrick). Near the end of the film at the metal works, the T1000 impales Sarah in the shoulder and demands that she call to her son John. The T1000 intends to sample and utilize her voice to lure John to his death. Sarah refuses with a brave, "fuck you," yet the T1000 captures her voice regardless. The T1000 then transforms into a copy of Sarah and calls out to John for help. John, however, recognizes that such a call is uncharacteristic of his mother and rejects her. The real Sarah reclaims her voice by shooting the T1000 into submission. Ultimately, the film reaffirms Sarah's authority by establishing her outside the diegesis through the ending voice-over. Thus, her voice transgresses the narrative and in part the standard Hollywood practices of containment of the female voice, because we are unsure whether this account is on tape or just an internal recollection.

Mary Anne Doane notes that sound in classical Hollywood cinema "sustains a limited number of relationships between voice and image."[6] Science fiction in the era of sound design, however, allows for an ever-expanding palette of relationships between the voice and the image. Throughout *Terminator 2: Judgment Day*, the Terminators are revealed to have the ability to mimic voices, which allows the filmmakers to collapse notions of identity, gender, and age while at the same time exploring intertextual play and self-reflexivity about the image-sound connection in cinema.

The most significant exploration of mimicry occurs during the phone conversation between John Connor and his foster parents. In one sense, the scene is self-reflexive of the process of dialogue replacement as it deftly mismatches the voices and images of the characters. The moment of "hesitation" is powerful, yet the fusion of the image and sound by the cinematic technology overpowers the filmgoer into accepting the situation as authentic.

In the scene, the telephones link the various locales and contain the voices within the diegesis, yet something is amiss. Gender roles collapse as the T1000 Terminator samples the voice of John Connor's foster

FIGURE 11.1. *Terminator 2: Judgment Day* (1991) Copyright © 1991 Carolco. The most significant example of audio mimicry occurs in the audio conversation between John Connor and his foster mother/T1000.

mother. In exaggerated motherly concern, she/he talks about making dinner. The unseen violence in this mimicry comes as the Terminator transforms its arm into a blade and impales John's foster father, Todd, as he drinks from a carton of milk. John senses something is not right and the T101 Terminator (played by Arnold Schwarzenegger) takes the phone. The T101 samples John Connor's voice (collapsing the notion of age as well as identity). It represents a sound-based confrontation in which the two Terminators duel by exchanging captured voice patterns. It is only an error in knowledge regarding the name of the family dog that serves as a password to reveal the lack of authenticity and credibility of the T1000's voice. The engagement of audiovisual play in the scene is multifaceted as it functions in relation to both the narrative and the cinematic apparatus itself. Ultimately, this play offers a unique means to navigate the site of contact between man and machine, easing the violence of interpenetration.

Essential to the science fiction genre and blockbuster cinema is this sense of play, not only on the level of sound technique but also on the level of sound content. One final use of the voice relates to intertextual play of dialogue within the genre. The fact that *Terminator 2: Judgment Day* is a sequel to a highly successful and thus culturally recognized work inevitably assures a higher incidence of play, which has important implications for reading strategies related to the narrative. Although some critics might argue that a film like *Terminator 2: Judgment Day* lacks narrative complexity and relies too heavily on spectacle, contemporary filmgoers familiar with the genre situate the film's narrative within a larger context through intertextual understandings. Thomas Schatz frames the importance of intertextuality in generational terms:

> Younger viewers . . . are far more likely to be active multimedia players, consumers, and semioticians, and thus to gauge a movie in intertextual terms and to appreciate in it a richness and complexity that may well be lost on middle-aged movie critics. In fact, given the penchant these years to pre-sell movies via other cultural products (rock songs, comic books, TV series, etc.), chances are that younger, media-literate viewers encounter a movie in an already-activated narrative process.[7]

Within science fiction cinema, this type of open reading strategy adds an additional layer of meaning (and pleasure) to the sound track by encouraging a sense of mastery over the ongoing narrative text by fans. The

two most significant examples of dialogue intertextuality in *Terminator 2: Judgment Day* are related to the first Terminator film. As John Connor and the T101 attempt to rescue Sarah Connor from the mental hospital in *Terminator 2: Judgment Day*, the T101 holds out his hand to Sarah and says, "Come with me if you want to live." These are the same words spoken by Kyle Reese in the first *Terminator* film as he rescued Sarah from another T101 (again, played by Arnold Schwarzenegger). Thus, the line provides a bittersweet irony for the character as well as the filmgoer. The dialogue recalls the love story between Kyle and Sarah, while at the same time invoking the horror of their flight to destroy the first T101. The irony lies in the fact that the line is now spoken by another T101 Terminator, which looks exactly like the one that killed Reese and nearly killed Sarah. The use of the line resonates as a form of linguistic mimicry and memory that calls attention to the time-travel aspects of the film and also underscores the expectation of intertextuality developing in contemporary blockbuster franchises.

A purely comedic use of intertextual play in *Terminator 2: Judgment Day* comes when the T101 states, "I'll be back" and goes out to confront an army of police. The line again refers to the first *Terminator* film and the police station sequence in which the T101 smashes a car through the lobby to get to Sarah. In *Terminator 2: Judgment Day*, nearly the same sequence is again played out. The Terminator, however, does not kill a single police officer (as ordered by the young John Connor), but returns to Sarah and John riddled with bullet pocks and hanging flesh. The tag line plays on cultural identification of the dialogue with the Schwarzenegger persona and on genre expectations of mass destruction and conflict—ultimately, it indicates that even cyborg wit is a site of violent conflict.

MUSIC: METAL RHYTHM AND HEAVY METAL

Sobchack notes that music in classical science fiction cinema tends toward "the invisible," yet it can vary in application, becoming "far more aggressive and conceptually based than traditionally employed film music."[8] As noted in the case study of *2001: A Space Odyssey*, music in science fiction has played an ever-increasing role in establishing the mood, meaning, and dominant themes of genre films. It is not surprising that the score for *Terminator 2: Judgment Day* is aggressively conceptual, recalling militaristic tempos and sparse variations. Gary Rydstrom notes, "I think the score in this movie works as the driving element that holds

parts of the mix together."[9] It beats like a mechanical heart almost constantly throughout the film.

The overall score by Brad Fiedel is rhythmically based, establishing leitmotifs based on metal percussion for the Terminators and wood for the humans like the police. These motifs foreshadow a character's appearance and underscore their actions. Throughout the film, the Terminators are associated with the specific musical riff of the ringing of heavy metal chimes. Synthesized melodies also underscore these tones. One instance of this musical configuration occurs when Dyson looks at the metal arm of the Terminator in the vault at Cyberdyne, the company that develops the technology and software that leads to Judgment Day. In this instance, the use of metal-based sounds blurs the line between music and sound effects, yet the result creates a sonic signature for the Terminator (even when only part of the character is present). Thematically, the chimes could be thought of as funeral bells, signaling the possibility of death.

One important variation of the Terminator leitmotif occurs midway through the film, when Sarah Connor attempts to kill Dyson in his home. In a subtle commentary, the Terminator music underscores her action in the scene, sonically revealing that she has become like a Terminator. The music fades slowly and dramatically when she realizes she cannot kill Dyson and that he represents the humanity she is fighting to preserve. The moment offers an important transgression, revealing that humanity and machine programming/ideology are part of the cyborg conflict. Remember, it is John Connor who continually tells the Terminator, "You can't just kill people," and returns to the city to stop his mother from killing Dyson. He knows that it is not the machines, but men, who are the true Terminators. Of this classic science fiction dilemma, Stuart M. Kaminsky has written,

> Humanity is truly the enemy of humans. It is almost always individuals who have brought the potential destruction of the future down upon their own heads. It is humans who are responsible for pollution and atomic warfare. It is persons who must overcome their own animal emotions and fears if they are to survive as social beings.[10]

It is Sarah Connor who makes this same realization at the end of the film in her voice-over (with no metal-based sounds for underscoring).

In addition to the examples noted above, metal relates to other generic elements in the musical score of *Terminator 2: Judgment Day*. Metal scrapes across piano wires and stringed instruments punctuate dramatic or unexpected moments (i.e., when the T1000 jumps onto a truck and pulls out the driver). These high-pitched hits or sonic jolts are in part a convention of the horror genre assimilated by the science fiction genre. They evoke a leap in anxiety, fear, and dread. The music, in general, creates an unsettling atmosphere, which, like ambience, is a prime generic concern of science fiction. As H. P. Lovecraft and others have noted, atmosphere is often more important than narrative within the genre of horror (and by relation science fiction). Within the blockbuster tradition, this adage holds firm even today.

The motif of metal also plays an essential role in the sound track music of *Terminator 2: Judgment Day*. Heavy metal music is associated with John Connor as a rebellious youth. In particular, the song "You Could Be Mine" by Guns N' Roses can be heard on his boom box as he flees his foster home on his dirt bike with his friend. The lyrics of the song punctuate the underlying conflict of the film, specifically that outside forces are stalking the young John Connor. Thus, the sound track music moves outside the diegesis to present a form of narrative commentary. Yet the song is also anchored within the diegesis through inclusion of the boom box that appears in the scene. In this way, this song moves from source to score with ease. The associations and selection of the music also move well beyond the borders of the celluloid, however, and underscore the industrial imperatives of the Hollywood entertainment industry. Musical placement is constantly used in contemporary sound designs to position potential consumers, the youth market, to see the film and, more important, purchase ancillary products such as CDs, DVDs, and video games, which provide greater revenue potential than box office grosses.

Examples of music as narrative motivator and commentator come earlier in the film. The twangy country music version of Dwight Yoakam's "Guitars, Cadillacs" creates the redneck atmosphere for the biker bar in the opening act of the film. This music evokes both the idea of score and source, as it is processed to localize its source of origin as a jukebox. In terms of sonic blocking, it also creates an amusing contrast to the image of Arnold Schwarzenegger walking through the bar completely naked. The most conceptual use of the sound track music in the film, however, comes when the T101 Terminator exits the biker bar. The camera frames the concrete steps of the bar as the T101 descends, now fully dressed in black biker leather. Simultaneously, the sound track blares with the

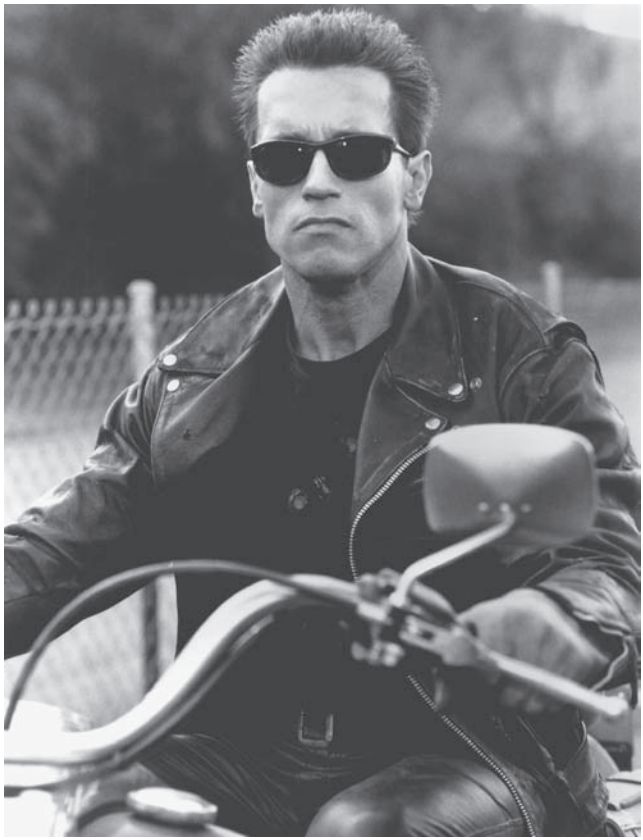

FIGURE 11.2. *Terminator 2: Judgment Day* (1991) Copyright © 1991 Carolco. The sound track song "Bad to the Bone" is used to ironic effect to describe the T101 terminator, which is neither bad nor bone.

song "Bad to the Bone" by George Thorogood and the Destroyers. The music is located outside the diegesis and thus the nature of its placement is immediately suspect. A metaphoric interpretation is aggressively encouraged.

The play is on two words—"bad" and "bone." "Bad" in this case is inverted and means good—the T101 is a protector for John Connor. "Bone" is also inverted and means metal—again, the play is on the notion of cyborg. The stylistic of image and song works conceptually as musical spectacle redefined within a science fiction context (much like the waltz scenes in *2001: A Space Odyssey*). This can be thought of as a means of cinematic play, which is one of the pleasures of the science fiction genre.

SOUND EFFECTS: METAL AND THE FRAGILITY OF THE HUMAN BODY

The primary sound effect motif in the film centers on metal. According to Rydstrom, he and his team collected sounds of metal by banging girders inside a building that was under construction at Skywalker Ranch.[11] Metal squeaks and clangs throughout the sound design of the film. It provides an essential rhythm to the sound track and the narrative. In fact, the narrative even ends in a metal works. As with the music, the sound effect of metal is directly associated with the Terminators. During the shoot-out at the Cyberdyne building, the T101's flesh is torn away by bullets that ricochet off his metal endoskeleton. The T101 uses a metal rod to tear off his own arm, and the rod is later used to impale him. The T1000 is a liquid metal that absorbs the impact of bullets and reseals itself. Later, he is frozen and a bullet shatters his body. As the motif recurs in association with the Terminators, metal sounds quickly become the metaphor for machines. Sobchack notes that machine sounds (metal) are "used in nearly all SF cinema and are generically resonant . . . akin to the sound of . . . squealing tires and gunshots in the gangster film."[12] Metal and machine sounds are thematically linked to the science fiction genre, yet the sounds are associated not just with Terminators in *Terminator 2: Judgment Day* but also with the humans in the film. Sarah, for example, shows her command over metal and the mechanical at the moment of her introduction. In the hospital, she does pull-ups on the metal bed frame, which creaks under her control. Her muscular body is a demonstration of that control over time. Later, she picks a door lock with a paper clip and breaks off a key in a door. Within the motif of metal, humanity resides as well. Humanity is part of the machinery because humans have programmed the machines. In "A Manifesto for Cyborgs," Donna Haraway argues that this is a consequence of living in a technological society from which we cannot escape and that such an interpenetration should be embraced in new mythology and daily existence.[13]

Terminator 2: Judgment Day's narrative and sound design bear out this project but explore the site of contact as one of extreme violence. Throughout the film and the sound design, humanity and metal interact violently. Metal can be associated with bullets, rockets, bombs, and other weaponry in the film. Countless police are wounded in the gunplay, other characters are impaled, and Sarah herself is shot as well as impaled by the T1000. These applications reveal the site of interpenetration between machine and man and are indicative of the primary project of the sound design of the film, which is the sonic exploration and exploitation of the

fragility of the human body. This theme of interpenetration carries over from the initial *Terminator* film (1984). According to Constance Penley,

> Interpenetration of human and machine is seen most vividly . . . when Sarah is wounded in the thigh by a piece of exploding Terminator shrapnel. Leaving aside the rich history of sexual connotations of wounding in the thigh, part of a machine is literally incorporated into Sarah's body.[14]

The sound effects of *Terminator 2: Judgment Day* reveal the intimate contact between metal and the human body. They explore how bones and flesh can crunch, burn, break, separate, and explode under the influence of metal, from the Terminators to bullets. Examples of this project are evidenced in the opening scenes of the film. In the biker bar, the T101 grabs a man's hand, crushes it, breaks his elbow, and then pitches him onto a hot grill. The T101 also breaks the arm of another man and impales him with a knife to a pool table. The sounds work to create a sonic geography of the human body, primarily the skeleton and connecting cartilage. The resulting sounds create anxiety and distress for the filmgoer by revealing the fragility of the body. In the network television broadcast of the film, the majority of the images remained in the film, yet a number of sound effects were removed. This censorship supports the notion that sounds are sometimes more emotionally disturbing than images.

The notion of body fragility is further explored in the scenes in which the T101 shoots at the kneecaps of the police at the hospital and the Cyberdyne complex. The sound quality of the impact of the bullets implies a close microphone to subject distance, which creates the equivalent of an auditory close-up. As Rydstrom has noted, "It's more effective emotionally to realize how hard something is being hit by a bullet than it is to realize there's a gun being shot twenty yards away."[15] The emphasis then is no longer on the origin of the sound (the gun) but the effect (the impact of the gun's bullet). This is an inversion of the previous sound design ideology employed by Westerns and other genres. Thus, even the mode of production supports the ideology of the cyborg conflict.

FOLEY: TRANSFORMING BODIES

The final component of sound in the mix of *Terminator 2: Judgment Day* is Foley. Foley sounds (footsteps, movement of clothes) provide pivotal

sonic anchors to the body and unify the spaces in which a body moves. These sounds are recorded in synchronization with the picture by Foley artists or walkers. If sound effects explore the fragility of the body, Foley places and contains the body within specific spaces. One of the most significant uses of Foley in *Terminator 2: Judgment Day* occurs in the hospital sequence as the T1000 is walking down a hallway, scanning for Sarah. The Foley sounds reveal one of the most important science fiction themes—transformation. In this case, the sound design deals with transformations of forms, specifically, human and machine. In the beginning of the sequence, the T1000 has appropriated the form of a hospital guard (his footsteps echo off the walls), yet, in mid-shot, the camera pans away to the number on a door and then back again rapidly. In the lull of the movement, the Terminator transforms off-screen and returns to his original form. The power of the scene comes not in visual morphing technology, which is avoided through the camera move, but in the sound of the footsteps, which alter mid-step, sweetened only by the sound of a midrange chime, which has become a leitmotif of transformation as well. The long take of the shot and the unbroken rhythm of the footsteps privilege the sound and break the traditional image-sound hierarchy. The transformation occurs completely on the level of the auditory track as the footsteps become anchors in the tangible but then trick us, revealing a body that is both man (albeit in image only) and machine.

CONCLUSIONS

The sound design of any film is a product of the mixing of the various elements—ambience, music, dialogue, Foley, and sound effects—as well as an amalgam of genre considerations and expectations. Like a music score, it is a process of careful planning, orchestration, and conducting by the director and the sound supervisor or designer as well as the numerous individuals who edit, record, and re-record the sound elements. Through this process, the overall sound design adds an additional layer of narrative enunciation to a film, allowing a filmmaker to point to specific actions or events through sound emphasis or isolation. In this final context, the complexity and potential of sound design is illustrated in all its forms from the creation of specific effects to planning and pattern of the final sound track.

Part VII

Conclusion: A Sounding of the Future

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What Is *The Matrix*?

SOUND DESIGN IN A DIGITAL WORLD

THROUGHOUT THIS BOOK, I have traced the changing conception of sound design in contemporary cinema and its relation to the science fiction genre. Although sound design first began as a term to describe the changing mode of sound production in the 1970s, it was quickly transformed into an approach in which specific sound effects could be constructed. It has since become a means of understanding how sound in film is deployed and evaluated. My analysis of sound design, thus far, has been contained within the parameters of the production process and the theatrical exhibition space. Inevitably, though, sound design has found a way into our daily lives through home theater systems, new consumer formats such as DVDs, as well as new media forms designed for PCs, Xbox, PlayStation, and Nintendo, among others. In these new contexts, sound design is once again undergoing a retrofit in terms of its application and meaning. Theatrical sound tracks have literally and figuratively been "matrixed" to fracture audio and visual content and reconstitute the elements in new ways. In addition, audiences have been encouraged to take on greater agency in terms of sound reproduction, deployment, and even sound literacy in the installation and use of these technologies. Once again, the science fiction genre plays an important historical and cultural role, because it has fostered and supported this high-tech trend through its rituals of fan culture, as well as its unique style and narrative dynamics, which at times provide critiques of this technology and application. The expansion of sound design into these new areas is significant because it underscores yet another shift in entertainment economics and industrial imperatives, which now foster the development of both entertainment products or "software" (films, television programs, games, and web content) and "hardware," the delivery

mechanisms, as a means of broadening corporate portfolios and profits. Sound design and science fiction provide a crucial bridge in this process of convergence between content and technology and have even become a theme in films such as *The Matrix* and its sequels.

William Gibson appropriated the term "matrix" from mathematics and applied it in the context of science fiction to refer to cyberspace in his novels, but this term has also evolved to become a descriptor of cyberpunk and its ability as a mode of storytelling to interconnect science fiction, techno-style, and a canopy of data (as well as reading protocols). It is important to note that *The Matrix* film series was one of the key Hollywood franchises to launch the DVD format with digital sound and an Academy Award–winning sound track. The self-reflexive narrative of the film, coupled with rituals of science fiction fandom, encouraged audiences to peel back the layers of digital rain (that falling matrix code) to understand this new age of digital sound and filmmaking. In this conclusion, I draw examples from *The Matrix* series and its connected products (*Enter the Matrix* and *The Animatrix*) as a means of examining how sound design has leapt into the digital realm and continued to change our audio (and visual) subjectivity. Specifically, I address how home theater systems have taken up the idea of immersive sound (surround sound) and embedded audio technology into the design of the home. As a result, the television screen is no longer the only center of attention in these venues. Rather, the audio elements create a shroud of sound that expands the narrative (its story and spaces) in a simulation that masks the "real" and immerses audiences in a film's extended diegesis. In addition, I examine how new consumer formats, particularly DVDs, have become data bases of information about sound design, encouraging sound (and visual) literacy by fostering the navigation of director's commentaries, as well as isolated audio tracks, and other features. In many ways, these DVD features are connected to science fiction fandom, which has always encouraged ongoing knowledge gathering, re-readings of texts, and mastery of science fiction narratives and their production histories. This knowledge base becomes part of community building and intertextual play for fans. Finally, I am interested in how film sound designs facture and jump from cinema-like open-source code to be picked up and applied to computer and console games, creating a vale of digital audio that drives and directs users to a new sonic subjectivity (with its pleasures and pitfalls). The matrix of sound design is all around us.

SURROUND SOUND AND HOME THEATER: CREATING AN IMMERSIVE SPACE IN THE HOME

> The power of The One extends beyond this world.
> —THE ORACLE IN *The Matrix Revolutions*

Just as sound design and science fiction are connected, so are sound design and home theater systems. In the 1980s, home theater technology solidified the multichannel sound design model—even prompting distributors and producers to remix and remaster older films (particularly genre films) to appeal to the new home theater consumer market. "Remastered in Dolby Digital" has become a familiar tag on DVDs of older films.

The goal of home theaters and new release formats was to surround audiences in sound, creating a new immersive space that expanded the audio and visual world of a film. In this way, the home could become just like the theater. The transposition of theater exhibition to the home, however, has not been one of simple transference. A host of new technologies, home design strategies, and even release formats had to be developed. These factors meant that film content was not simply transposed but, rather, transformed. Sound became a central component to home theater design and exhibition. And as a result, audiences have become more conscious of issues of sound technology, quality, and design.

The multichannel trend began in the home with the introduction of a four-channel Dolby surround format for audio receivers in conjunction with Beta Hi-Fi and VHS Hi-Fi tapes. This system allowed surround material to be channeled into speakers flanking the television viewing area. Despite these advances, the limitations of this early technology to mimic the theatrical audio design were evident. The audio channels were not discrete—instead, they were simulated by Dolby circuitry—and the audio processing varied in terms of equalization and other factors (sometimes sound from the center speakers was too bright, while sounds in the surrounds were too muted). Also important, though, the home audience's attention was no longer focused solely on the television console and screen. The television technology itself was splintered and diffused through the room by the audio-visual equipment, cables, and multichannel speakers, creating an environment of immersion.

The initial Dolby Stereo surround sound receiver was subsequently upgraded as new release formats and audio processors that could offer

discrete sound encoding and decoding were developed. Of particular interest for this study is the development of DVDs, which became a widely accepted release format for film and television programming beginning in 1996. DVDs offered high-resolution image quality and discrete audio encoding. The audio-encoding format that dominates the market today is Dolby Digital 5.1, which is used on the majority of DVDs released from Hollywood distributors. All of the *Matrix* films, for instance, have been released with English language (and sometimes French or Japanese) Dolby Surround 5.1 audio. This audio format allows home theater systems to discretely channel sound to six separate speakers within the exhibition space (left, center, right, left surround, right surround, and a subwoofer channel). The advantage of this system is that it offers unprecedented sound separation, fidelity, and dynamic range. In many respects, we have come full circle in regard to sound quality as it relates to the technology found in the home versus the theater. Home theater systems often reproduce sound with greater fidelity and quality than the sound technology found in local theaters. Local theaters also suffer from the undesired sounds of overly active air conditioning units, the chirp of cell phones, and sound track bleed from adjacent auditoriums. These factors raise noise levels and distract audiences in ways that are minimized in the home setting. Home theater technology also supports Walter Murch's notion of "hanging" sound in specific spaces, partly because establishing sound fields is part of the design planning for speaker installations.

In consumer publications such as *Home Theater*, *Stereo Review*, and others, advertising and feature stories with photo retrospectives reveal how far home theaters and home theater sound have come since the 1990s. In 2005, the *Los Angeles Times Magazine*, for instance, published a "Home Design Issue" that featured high-end installations of home theater systems for producer-director Jon Avnet (*Sky Captain and the World of Tomorrow*) and other Los Angeles–based executives.[1] The systems ranged in price from $50,000 to $300,000. The issue included ads for plasma screens, art deco speakers, reclining chairs, media storage, and electronics packages that included sound amplifiers and receivers. The features advocated "the home theater explosion" noting, "[w]ith technology constantly advancing and systems for every price range, the media room is evolving into a regular household feature."[2] The home theater can be a "first run house" or a "cinéma-bibliothèque" so even film history plays a role in these installations—it is all in the design.[3] According to the Consumer Electronics Association, nearly one in three households has a home theater system (or what they define as a television, VCR or

DVD, and four or more speakers).[4] Just as important, a system of design parameters has emerged to construct these environments, which places audiences in the center of the cinematic simulation. Most home theater systems follow the theatrical paradigm in terms of screen placement and seating, though specific placement of components varies according to room size, décor, and design. The Consumer Electronics Manufacturing Association recommendations are typical of most offered by manufacturers and installers.

> Ideally, the primary seating unit (a couch for example) will be parallel to the television screen and face directly at the screen. . . . The distance between the television and the couch depends on the size of the screen. . . . The distance between the viewer and the television should be about four times the size of the screen. For example, if your screen is 35 inches, the seating area should be 10 to 11 feet away.[5]

Speaker placement is integrated within this model as a means of optimizing sound design. The center speaker is generally aligned above or below the television screen, while the left and right speakers flank the screen. Surround speakers are often mounted (or hung) on the walls to the sides of the seating area, while the subwoofer for the low bass channel is placed on the floor in a reflective corner of the room or beneath the seating area. For home audiences, the nearly circular alignment of the speakers supports the goal of surrounding the audience within the sonic and narrative world. As they watch and listen to a film like *The Matrix*, home audiences are literally inside the Matrix world, at least in terms of sound.

In an early scene in *The Matrix*, Neo (played by Keanu Reeves) and Morpheus (Laurence Fishburne) enter the "Construct" (a simulated combat space) to spar. The filmmakers call attention to the immersive qualities of the sound design by cleverly removing spatial audio markers. Sound designer Dane Davis strips away the ambient effects bringing down the noise level (one of the great advantages of digital technology over analog) and accentuating the voices, which seem almost detached in the deadened virtual space. The motivation for this design was to comment on the "limitations" of the computer simulation into which the characters have entered. According to Davis, "the Construct . . . was like their little laptop model of reality." Thus, it did not have the processing power to fully integrate a textured sound design.[6] This is a very clever example of immersion through inversion, stripping away sounds we would expect to hear as a means of calling attention to the immersive nature of

the simulation. Thematically, the scene and the sound design challenge audiences to address the postmodern concerns of simulation, illusion, and truth, which are central to *The Matrix* story. As one of the potentials later notes to Neo, "Do not try to bend the spoon. That is impossible. Instead try to realize the truth. . . . There is no spoon . . . only yourself." The immersive sound design asks audiences to bend their ears to a new state of understanding as well.

The resolution of the sound design amps back up as the film returns to the "real world" and eventually the hyperreal world of the "matrix." By contrast, inside the "matrix," the fight scenes are much different. Drawing heavily from Hong Kong action films, the sound design of the fight scene in the train station for instance is "exaggerated" and "augmented," accentuating a "power that was not just derived from muscle structure."[7] The sound effects of the punches and kicks connect on a visceral level (with "whooshes" and body hits) and all of the spatial markers return from the sound of the passing trains to atmospheric effects of room tone and the disturbance of the air. Throughout the film, listeners must differentiate the levels of immersion that they and the narrative have entered. This puzzle of shifting sound perspectives is one of the pleasures of decoding *The Matrix* sound track.

In regard to cinematic-sound immersion and the home theater, it does not end with just surround sound and the viewing screen. It connects on the level of fandom as well. To enhance the perception of immersion, the room décor of upscale home theaters often includes framed movie posters, mounted replicas of props, and carefully displayed ancillary products from favorite films. The *Matrix* series, as an example, has generated numerous action figures as well as a series of popular posters featuring all the actors clad in black leather and sunglasses. In addition, a coffee table book of *The Art of the Matrix* showcases the designs featured in the first film. With the inclusion of such items to a home theater, domestic spaces are transformed into film archives and museums, connecting spectators to favorite films. The décor, like the surround sound, creates an immersive environment that transcends the domestic space and offers entry into a fantastical space, generated from the base narrative of a film like *The Matrix*.

In this move toward an immersive space, the question inevitably arises, Can the home really be a theater? Although the technology and décor may be similar, the translation of the experience is not equivalent. Lost are the critical social components of attending films in the theater—the perceived event status of a film and the sense of audience community.

The home theater cannot replicate the ritual of theatergoing—waiting in line for the event, which has a limited release period, buying a ticket, and experiencing a narrative and the emotions it evokes with a group of strangers. In *Widescreen Cinema*, John Belton notes,

> Projection [within the theater] enables the spectator to become a social subject, to share his or her experience of the images with others, identifying, as one member of the audience, with the audience as a whole and participating in an experience that was, like that of the traditional theater, spatially and temporally coextensive.[8]

In the motion picture theater, the "dual identity" of the spectator shifts between communal and individual subjectivity, but, within the home theater setting, this dual subjectivity is truncated.[9] To make up for this loss in social pleasure, though, home theaters in conjunction with new formats like DVD offer the individual a sense of programming convenience, abundance, and limited interactivity. This shift fosters a greater sense of mastery and control over the cinematic and sound content. Subsequently, sound design not only involves the individual listener but also instructs.

SOUND DESIGN AND MASTERING DVDS: FROM CONTENT TO COMMENTARIES

> "The answer is out there, Neo. It's looking for you. And it will find you . . . if you want it to."
>
> —TRINITY IN *The Matrix*

In the mid-1990s, the DVD format with its enhanced 5.1 digital sound capabilities became a critical aspect of the home theater movement, revitalizing the electronics consumer market and fostering the purchase (and repurchase) of films and television programs. While other studios debated their concerns around the DVD format and film pirating, Warner Bros. embraced the DVD format with the most enthusiasm, immediately remastering and releasing classic and contemporary films from their large studio library. Notably they are the distributors of science fiction films such as *Them*!, *THX 1138*, *Westworld*, *Superman*, and *The Matrix*, which became *the* film to own on DVD (as well as the reason to buy a DVD player). As *Daily Variety* reported in a headline, "Matrix Sets DVD Mark—

Hollywood—Warner Bros. has shipped a record-breaking 1.5 million units of its *The Matrix* DVD to retailers in a little over a week."[10] Subsequently, *The Matrix* series has now generated an extensive DVD catalogue. The programming includes DVDs of *The Matrix* (a single disc with the feature and various special features), *The Matrix Revisited* (a documentary), *The Matrix Reloaded* (a two-disc edition with the feature film and "an explosion of mind-freeing extra features"), *The Matrix Revolutions* (which includes the feature film and various extra features, including information on *The Matrix* Online game), and *The Animatrix* (a disc of anime and a CD of music). Finally in December 2004, *The Ultimate Matrix Collection* was released as a ten-disc DVD box set that includes additional supplemental material, artwork, and links to websites. The Matrix is everywhere, especially on DVD.

In general, this abundance of DVD programming (and a host of rental services and traditional rental houses) fosters a pattern of repeated viewing of films. As one of the ads for *The Matrix* notes, "See it again on DVD."[11] This repetitive viewing ritual is an extension of blockbuster spectatorship and consumption that began in theaters and has found its way into our home viewing patterns. With the release of such blockbuster genre films beginning with *Jaws* (1975) and continuing with contemporary Hollywood films like *The Matrix* series, repetitive viewing has become part of the consumer viewing strategy driven by advertising and a need to establish fan communities through shared cultural experience. In part, the film industry has driven the trend as it searchers for a wider audience and greater revenues. Miriam Hansen argues, "Blockbuster films . . . are catering to as many diverse constituencies as possible, confronting the problem, as Timothy Corrigan puts it, of 'an audience fragmented beyond any controllable identity.'"[12] The mastery of these film texts through repetitive viewing, however, fulfills a social need to create a sense of identity, community, and understanding for fans, no matter their background or country of origin. An important part of this process is the establishment by fans of a language and knowledge based around a narrative such as *The Matrix* that allows intertextual play and expansion of the narrative world into the real world. This play is taken up in websites, fan 'zines, and on-line blogs, establishing virtual communities. The DVD experience supports this culture of connection as it establishes new subject positions, offers production histories, and provides multiple readings of films.

In relation to sound, DVDs often support this pattern of repetitive viewing and encourage the goal of mastery through audio commentary

tracks (as well as isolated sound effects and music tracks), which are included on most disks. On the added audio tracks, producers, directors, writers, actors, and various production personnel typically offer their insights on specific aspects of a film's production. These commentaries are recorded and presented in synchronization with a film, presenting a historical and textual voice of authority. The number of tracks encourages fans to constantly reexamine their favorite films. The original *Matrix*, for instance, includes commentary by editor Zach Staenberg, visual effects supervisor John Gaeta, and lead actress Carrie-Anne Moss. A separate commentary features music composer Don Davis as he evaluates the music cues for the film. The "ultimate" box set of all three films includes additional commentaries by critics and philosophers, bridging an understanding of the film narratives to their sources in philosophy, religion, cyberpunk, and mythology. The multiplicity of perspectives fosters an unprecedented level of cine-literacy, particularly in the areas of sound and music. For instance, concepts such as rhythmic analysis and anthropomorphic sound construction are not only discussed but are also demonstrated in real time. Commentaries are asynchronous, fading in and out, around and over important sound moments, and, even if a cue is missed, the commentary can be turned off and the scene reviewed with the push of a button. In addition to *The Matrix*, a number of the films in this study have benefited greatly from the audio abilities of the DVD format. Most notably, *THX 1138* features isolated sound and music tracks with commentary by sound designer Walter Murch, and *Terminator 2: Judgment Day* features break out commentaries by sound designer Gary Rydstrom, which are accompanied by multiscreened images of sound sources, referents, and examples of remixes. The programming capabilities of DVDs solve one of the key problems in studying film sound—the elusive nature of the object of study. DVDs can now provide real time cine-sound analysis. One of the pitfalls of these commentaries, however, is their propensity to concentrate on production history and industrial processes. This approach often limits critical evaluations from other theoretical positions that might specifically address matters of genre, gender, race, or sexuality (among others).

The DVD format also provides limited interactivity through the inclusion of supplemental documentaries, cast and crew interviews, screenplay transcripts, Easter eggs (hidden features), and production elements. The *Matrix* series includes all of these features, and audiences are encouraged to navigate through the behind-the-scenes documentaries, storyboards, games samplers, and trailers. On the first disk in the series,

viewers are even encouraged to "Follow the White Rabbit" as a means of activating these features while watching the film. In general, menus allow a closed interactivity, predetermined by the DVD programmers and manufacturers. As with *The Matrix*, there are still layers of control that stifle complete choice and freedom (facets that are often promised by the developers of emergent technology). The disks do, however, provide data bases of information that facilitate active pursuit of textual mastery in a type of data hunting and gathering that the format, as well as fandom, encourages. As I have noted previously when discussing special effects, an understanding of the material manufacture of these effects (even sound effects) is part of the pleasure of the science fiction genre. On the disk *The Matrix Revisited*, for instance, sound designer Dane Davis talks about the influence of Hong Kong action films (and their sound tracks) on the creation of the "whooshes," face hits, and body hits in *The Matrix* series.

The documentary intercuts an interview of Davis with the final fight scene between Neo and Agent Smith in the train station. Only the combat sound effects play, so we see and *hear* their relation to the scene. Davis notes that he and his team created thousands of sounds but they were always "trying to have that very earthy, brutal, very musical quality that Hong Kong films" have.[13] For the Matrix, however, these sound effects are hyperrealized as well, to give "them a definition and articulation that they [Hong Kong action sound designers and editors] never had time to put into them."[14] Davis very aptly engages our familiarity with Hong Kong action film sound effects—these become our sonic anchors—as he complicates the sounds through layering, variation, and recording strategies to create the unique designs for *The Matrix*. Through this instruction and repetition, we are learning the martial arts of the ear.

Although action sound effects drive many of the combat scenes in the film, the overall sound design deals primarily with motifs related to telecommunications equipment, computers and electricity. The iconographic matrix code that streams down the screen, for instance, was produced from digital manipulation of water dripping into a barrel, and wisps and stings of electricity sound effects (produced with various arcing devices) accompany the camera zooms into the visual representations of the matrix code. In addition, these sound effects are often layered with modem chirps and telecommunication interference. The aim is to create a sustained sense of surveillance and monitoring by the computers and machines that rule this totalitarian world. The machines depend on

FIGURE 12.1. *The Matrix* (1999). Sound designer Dane Davis draws from Hong Kong action films to create the "whooshes," face hits, and body hits used in the fight sequences in *The Matrix*.

the humans for electricity, so they are vigilant about any signals of a low battery supply. It is not surprising that the programming design of the DVDs picks up on these sound effects motifs (while also borrowing bits of dialogue, music, and ambient effects). These sounds are fragmented and used as stingers (or audio punctuations) into the various menus. The "Scene Selection" menu on the original DVD includes the specific *Matrix* code sounds accompanied with snaps and arcs of electricity. It is not without some irony that the *Matrix* world (and its sound design) slips out into the programming of the DVDs. In this way, the sounds establish themselves as sonic icons, or what I call "sicons" (a sound-specific term),

functioning like a digital form of onomatopoeia. These "sicons" provide an intertextual connection to the base narrative while also calling attention to the artifice and spectacle of their design. Their placement in the DVD menus calls attention to their use as interactive markers and activators. Culturally, the sounds become not just part of the *Matrix* brand but descriptors of the *Matrix* as a mode of understanding our high-tech and highly wired world. After all, the *Matrix* is about these issues of command, control and mastery.

Although many new media theorists argue that interactive formats (albeit even closed interactive forms like DVD) are primarily designated and defined by the frame (scalability, menus, and the like), I would argue that sound design plays an equally important role. New media sound design (as in feature film sound design) presents cues that motivate attention to specific areas of the frame or to specific actions. Sound also provides thematic structure and meaning. And it can function as an overture to the larger sound design for the base narrative. The window-washing scene in the original *Matrix* film even humorously comments on the importance of paying attention to sound in the world of windows (new media windows that is). As Neo (Mr. Anderson) is reprimanded by his boss at the software company, two window washers stand on a scaffolding and squeegee suds away to clear the panes. The sounds function on a subjective level for both the character and the audience. The squeaking is disconcerting, like nails on a chalkboard. They punctuate the underlying humiliation Neo feels about this "talk." The sound design also functions metaphorically for Neo—telling him to clear the screens (to clear his mind of preconceived notions), because nothing is as it seems. If he doesn't, he could end up like his boss, a trapped, monotone bureaucrat. Like the Merovingian character (who appears in *The Matrix Reloaded*), this corporate figure (who plays by the rules) represents what Neo could become if he doesn't wake up. The sequence ends with Neo making his first attempt to break the rules and climb through the glass/screen (yet only later does he succeed and become The One).

Although the limits of the closed DVD format are evident in terms of interactivity and sound design, the *Matrix* franchise is not so limited. The series and sound design reach into the realm of gaming and new media with seemingly unlimited possibilities. In these digital realms, the base narrative expands and fans are encouraged to continue their pursuit of mastering the *Matrix* world. Sound design offers them a point of entry and clues along the way to achieve this goal.

GAMING: PLAYING WITH SOUND DESIGN

AGENT SMITH: Why? Mr. Anderson. . . . Why do you keep fighting?
NEO: Because I choose to.
—*Matrix Revolutions*

Although many filmgoers will not venture into the realm of games, *The Matrix* ancillary products in this area nonetheless continue to expand the programming of *The Matrix* story and, more important, sound design in ways that point to the future for both. Because games reach a different segment of the mass audience, designers must fulfill the expectations of fans of the films and of gamers (who may not be film fans). Subsequently, the challenges have created unique audio-visual hybrids in terms of design form, storytelling, and, again most important, sound design.

The *Matrix* franchise has fostered the development of three games, the most recent of which is *The Matrix: Path of Neo*. *Path of Neo* allows players to be Neo and features fight scenarios from all three films in the series. In 2005, *The Matrix Online*, a massive multiplayer online game, was also launched. This game continues the story of the *Matrix Revolutions* by following those humans who have been recently freed from the *Matrix* power plant (or farm). The game players awake, define their characters inside the virtual world of Megacity, and set out to meet (and often to fight) others who have been freed. Here, I will specifically focus on the first *Matrix* game to be released—*Enter the Matrix*. This PC- and CD-ROM-based game was conceived and produced in conjunction with the second and third installments of the film franchise, and it presents a parallel plotline with the *Matrix Reloaded*. The game integrates three different aspects of media design. First, it offers full-motion DVD video, using the same sets, audio and visual effects, and principal actors as the films. An additional hour of footage, not seen in the films, features the characters of Niobe (played by Jada Pinkett Smith)—the hovercraft pilot introduced in *Matrix Reloaded*—and Ghost (played by Anthony Wong), a Zen-Master of combat and weapons. Their first mission is to retrieve a package, which was delivered by the crew of *The Osiris* (featured in one of the anime shorts in *The Animatrix*). The package contains information about the machines and their plans to destroy Zion. Subsequent missions involve the rescue of characters at the airport and various tasks set by the Oracle. Second, the game offers cinematics, which are motion-capture animation sequences. These fixed animation scenes were created by

affixing tracking balls to the actors (their bodies and faces) and capturing their movements and gestures in the computer environment. Computer designers and artists later created virtual versions of the actors to place inside the game. Audio was often recorded during this process, which presents an immediate intertextual connection to the sound design of the films. Finally, *Enter the Matrix* includes a variety of gameplay aspects integral to its design. The types of gameplay include shooting, combat, and driving; however, overall it is mostly a third-person combat game. The diversity of this media design fulfills expectations for gamers and fans by presenting some structured sequences (the minimovies that expand the base narrative) but also a variety of open-play aspects, which encourage action, analysis, problem solving, and exploration of the environment.

The sound design from the films informs the game in terms of production (dialogue, effects, and music, among others) and storytelling (themes, motifs and instances of spectacle). As with the menus for the DVDs, *The Matrix* sicons are an essential part of the overall sound design of the game. For the gameplay sequences, the sounds from the film are sampled and reconceived to fit the medium, yet they are anchored in the original designs. Sound designer Charles Deenam explains that "95% of the in-game sounds were redone from scratch" to fit the perspectives and "aural 'size'" of the game elements.[15] Because of the action-oriented nature of the game, many of the combat sounds cross over, including face and body hits, combat "whooshes," gunfire, and the bullet-time distortions of action and acrobatics. These sounds present anchors to the base narrative, authenticating the connection between the game and the film while also providing instances of visceral audio spectacle for gamers. As Dane Davis notes, "It's all about that unity [between the films and the game]. Making it all seem like one big piece."[16] The extension of sound into games is akin to off-screen dialogue and sound effects in extending the diegesis of a film. As Mary Ann Doane argues, "The voice-off deepens the diegesis, gives it an extent which exceeds that of the image, and thus supports the claim that there is a space in the fictional world which the camera does not register. In its own way, it accounts for lost space."[17] The use of sounds from the film (dialogue, music, and effects) reclaims lost space, creates new space, and even offers new action and story elements (in conjunction with the game animation, of course).[18] This approach to sound design, in particular, has been attempted before in a less technology driven form—the opera. In *Jacking In to the Matrix Franchise*, editor William G. Doty suggests "to stage so extensively and complex an artistic and commercial production can be compared to what Richard

Wagner attempted in his German opera house: he sought to produce *ein Gesamtkunstwerk*, a total, all-encompassing, and synthesizing work of art that would provide nationalist ideals."[19] The difference today is that, rather than serving the nationalist ideals, the approach serves corporate ideals, so the aims of Wagner are somewhat lost in translation. The co-development of games and films is now an industrial strategy embraced by the Hollywood system. For studios and producers, reusing sound effects, music, sets, costumes, and even actors is an efficient application of immediate and existing assets to cross platform a media product. It has been a strategy applied successfully by publishers and studio story departments and has now been retrofitted for the field of gaming.

For games, however, the use of sound assets goes beyond their intertextual and industrial connection. The sounds are necessary activators for gameplay. They are part of the agency for the gamer, whose actions in the virtual environment trigger the sound effects. These sound effects affirm the sense of immersion and connection to their avatar inside the game (in this instance Niobe or Ghost). The aesthetics and pleasure of play are presented in their most simple terms in this model—gamers push a button to create an event and a sound effect. As with DVDs and home theater, games and gameplay reveal the shifting and displaced pleasures that audiences are seeking today outside of the motion picture theater. Audiences still feel the nostalgia for the base narrative, but they pursue it in a new way through the game tie-ins. Sound design affirms the connection (as does the additional story material).

The sound design from the film is not, however, simply reappropriated to fit into a game. Often sound is reconceived in both construction and function to fit the medium. Dialogue, in particular, is greatly altered in terms of its organization and purpose within a game. As Art Eurrium, sound designer at Shiny Entertainment, which produced *Enter the Matrix*, recalls, "We recorded 12,000 or so lines of dialogue [for the game]."[20] These lines were spoken by the principal actors during the motion capture sessions, allowing the nuances of lip movements and synchronization to be associated with the virtual renderings of the characters. In addition, the actors were required to present different line readings of dialogue. Rosanne Sun, Interactive Producer of the game, explains, "We had the actors say the same lines fifteen different ways—which means every time you play it and get into that circumstance—you have a slightly different way of them saying it."[21] The circumstances may include factors related to combat or even a lull in gameplay. One can imagine that in the future as game designers link a player's voice (via headset and microphone)

to their avatars, that dialogue with interactive characters will be cued to speech (diction, questions, and comments) within the virtual environment. In *Enter The Matrix*, the voice then becomes an essential factor in differentiating and motivating the beats of the story action. Gamers must listen for both story elements and for commands, which are phrased as imperatives. This function is also supported by the game design, which uniquely links "help" functions to a system of instant messages (IMs) from the "operator" character (your link to the real world).

In terms of sound theory, application of the voice within the game environment engages codes of intimacy, identity, and authority just as it does in a film, but these too are reconceived. As I have noted in the chapter on *Blade Runner*, dialogue and the voice are connected to the identity of actors through inflection, accent, diction, and other factors. The voice and dialogue tell the story and bring us into the story world. We naturalize these factors within the cinematic construction because so much effort is put into the synchronization and smoothing of lines by dialogue editors and mixers in relation to the image. But this effect is also aided by the sense of verisimilitude that links the voice to the actor and his image. Within the virtual environment, however, although the production and re-recording of the voice may be the same, the connection to authority and identity are challenged because of the computer animation, which only approximates the actor and his image. Gamers/listeners must accept a greater level of a suspension of disbelief for the image-sound constructions to succeed. The status of dialogue and the voice in the game shift as well. Through imperatives, gamers are told what to do. For instance, Ghost yells to the player, "Dig in!" when combat is to take place. Dialogue drives the player to engage in actions within the interactive environment, which is a significant contrast to expectations in cinema.

Finally, one of the key differences between games and cinema comes in the area of sound mixing. For a theatrical film, there are often multiple mixes of the final sound track, depending on the release medium, whether it is presented in Dolby Digital, SDDS, DTS, or even on DVD. For games, the mix of the overall sound design can be different with every play of the game. The sound design constantly shifts on the basis of the players' actions, combining different combat effects and different line readings of the dialogue according to the situation or locale. The duration and timing of a shooting sound effect, for example, are influenced by how often the button on the controller is pressed. According to Deenam, there are more than "3,000 special moves" that are connected to more

than "40,000 sound entries."[22] Also included within these entries is the music for the game as well. Whereas film reels require a fixed music mix pattern for a twenty-minute reel, the music in a game must accommodate a gameplay of variable duration that is often dependent on the skill level of the player. During periods of inactivity by a player, for instance, the music will fall into a lull. Alternatively, music is often activated by a specific locale that a player has reached inside the virtual environment. Drawing on the model from early silent cinema, the virtual accompanist (programmed by the designer) provides music cues that telegraph mystery, create suspense, accompany chases, or offer simple sonic bridges. For *Enter the Matrix*, Don Davis, the composer for the films, has provided these musical movements, which combine heavy synth rhythms and rapid techno stings. Ultimately, the complexities of this variable mixing model shifts the focus of attention for players. Rather than present a directed organization of sound and music, game mixes tend to offer layers in their most basic combinations—music, effects, and dialogue. Note that the hierarchy of sound has also shifted somewhat. Dialogue is no longer the most important element during gameplay. (Its status is recuperated, however, in the full-motion video sequences and in cinematics.) In general, music seems to drive the action during most gameplay, linking with actions and images (following a silent cinema model) to establish immersion and a sense of flow. Designers have realized this shift and have even programmed games to seek out a player's MP3 files (stored on a hard drive for PC games) and access them during gameplay. Thus, a player's own music library can provide the sound track for both their life and their game-playing experiences.

At this point in history, sound design in games remains mutable and highly unpredictable. It is akin to waves shifting on a vast ocean's surface. Each play of a game brings new perils, new challenges, and new choices for both players and the choir of designers who preside from behind the digital veil. One of the key analogies used in the science of sound relates to the propagation of waves—a stone cast into a pond creating ripples, refractions, and reflections like sound waves. To extend this idea, games and new media designs present a vast virtual ocean for us to cast many stones into—all with the help of our controller. The ripples they make can be infinite and unpredictable in terms of the reflections and refractions they create. And as a result, new questions arise: At what point should gamers choose (or customize) the sound effects that they hear? What role does voice recognition have in the direction of a game? And how does this voice impact issues related to authority? Finally, what are the

next innovations in terms of sound and visual immersion? The virtual ocean rises and falls with these questions (and hopefully their answers). Just as important, the rules for sound design have not yet been set for this new medium, which makes this a very exciting time for sound designers and sound scholars. But what continues to be most important is that we delve beneath the surface of the waves to explore the mysteries, the complexities, and the depths of meaning that are found in the term "sound design."

Herein lies the future.

Appendix

OVERVIEW OF THE GENERAL PROCESSES OF SOUND PRODUCTION

In the course of the research for this study, I found that the industrial processes of sound production are not uniform. Rather, they vary according to the personnel and sound houses involved (and the equipment available). This appendix functions as an overview of the general processes of sound production that can serve as a reference to this and other studies on contemporary sound.

PREPRODUCTION

During the preproduction phase of the shooting of a film, sound production personnel are assembled to work on a project (between three and five people, depending on the budget). Positions generally include a production mixer and boom operator and sometimes others who will help with logistics and equipment. On bigger-budget films, entire teams of sound crews are assembled. On some films, sound designers are also brought on very early in the planning stages of a film to begin evaluating the film's sound needs and start experimenting with sound effects creation.

In the best of circumstances, production sound personnel scout locations with directors and producers or on their own as a means of gauging the suitability and equipment needs of a location. Difficulties in capturing usable dialogue may require dialogue looping (or replacement) later in the postproduction process. Most sound personnel prefer to capture clean sound on the set to avoid looping later. The scouting process can include listening during specific times of the day, listening for electronic interference (loud speakers, radios, and various uncontrollable elements), and testing audio equipment. This process will also include preparing a budget for sound personnel and equipment needs. Unfortunately, many producers limit the ability of sound personnel to do their jobs because of lack of knowledge in the area (and often because of budget constraints).

PRODUCTION SOUND

During a film production, sound is recorded in synchronization with the picture onto magnetic tape or utilizing newer digital recording equipment. Recording equipment

depends on the preferences and experiences of the on-set personnel. These recordings on the set become the scaffolding on which the sound track is constructed during postproduction. A recordist and boom operator work carefully with the director and crew to determine microphone selection and positioning. This requires knowledge of the script, the lighting and camera technology (which lenses are being utilized), and the methods of the director and actors. If an actor is prone to improvisation, a boom operator must be prepared for the changing situation. The sound mixer is also aware of the variations in sound perspective that are appropriate for the types of shots. The judgments made on set greatly affect the usability of specific takes during picture editing.

Microphone positioning may include an overhead microphone on a boom, which follows the actors keeping them "on mic" (or within the microphone's pickup pattern). Microphones can also be planted within a set. Lavalieres, or body microphones, are another option. These microphones are attached to actors and typically hidden beneath their costumes. This type of microphone limits extraneous noises on the set, which can, however, make the recording sound displaced or hollow (though this can be corrected during the mixing process).

The sound personnel on any set are faced with countless decisions about their priorities in relation to any particular shot or scene. Many recordists tend to gather as much usable material as possible to give the postproduction editing and mixing crew a variety of options. This may include collecting sound effects or wild lines during rehearsals or recording additional material when the set is quiet. Presence or ambience from the location, in particular, is recorded for use in dialogue editing. Of course, the main priority for a production recordist is to capture "clean" dialogue. This may mean using sound blankets or baffling to dampen sounds from outside the set or requesting that actors alter their behavior as to not create sounds while using props like utensils or computer keyboards. Sound personnel may also work with the prop and costume departments to ensure that their creations do not create undo problems in relation to sound.

Production may also require synchronized playback from other sources, particularly during musical sequences. These sequences are kept in synchronization utilizing electronic slates and various electronic markers generated by the recording/playback equipment. The music is then played back on speakers for actors or performers to lip-synch to the recorded material.

During the recording process, takes are recorded, and the completed tapes or discs are cataloged and later turned over to editors who will synchronize sound to picture.

POSTPRODUCTION

Today's electronic postproduction systems change almost monthly with the introduction of new software updates and computer technology. Again, the production approaches are based on the technological and software preferences of particular sound personnel and sound houses. Typically, during the postproduction process, footage is digitized into image files and the production sound is synchronized to the shots utilizing nonlinear picture software such as *Avid* and *Final Cut Pro HD*, among others. Time-codes function as electronic sprockets, which keep sound and picture in synchronization. Ideally, the sound portion of the postproduction process comes after the picture is locked, but this is never assured. In general, however, most sound editors spend a great deal of their time chasing picture changes, adjusting hundreds of audio

tracks that have been altered by the smallest of picture cuts or refinements.

Using audio editing software such as *Pro Tools*, sound material is split into tracks using as few as four or as many as a hundred tracks, depending on the needs and budget of the production. Dialogue editors work specifically on breaking out tracks by characters, finding the various takes that may be useable. The separation of tracks allows mixers to equalize and adjust these tracks with greater ease. During the editorial process, the dialogue tracks are smoothed by editing and overlapping the recorded presence (or ambience) of the various takes in a systematic manner. Through a pattern of cross-fading of presence, dialogue editors create an illusion of dialogue that is unaltered, continuous, and consistent. Dialogue editors must also integrate ADR (lines created through automated dialogue replacement) into the completed dialogue tracks. Looped lines are recorded in a studio setting with the actor viewing the projected image and correcting lines of dialogue or altering a performance by presenting a different line reading.

Sound effects editing occurs concurrently with dialogue editing in many instances. When the picture is locked (again in the best-case scenario), the sound designer or editor (in conjunction with the director, producer and even the composer) will spot the film for sound needs. Often the narrative needs and emotional beats of a scene become part of the discussions about sound design. The collaborative aspects cannot be underestimated at this point. A sound editor or designer may prioritize the sound effects needs based on the narrative considerations. For instance, Gary Rydstrom concentrated much of his efforts for *Jurassic Park* on creating dinosaur sounds. The sounds of the cars and various jungle ambiances, while important, did not need to be created from scratch. Library material proved sufficient in terms of cost and time available for postproduction.

Sound effects are typically gathered from a variety of sources. Original sounds are designed by using various recording and editing techniques. For instance, sound designers may record a ringing telephone from various distances (two inches, three feet, twenty feet) and in different rooms (a living room, an empty warehouse, or a phone booth). The different perspectives and environments for this one effect each create different spatial markers (e.g., a confined space) and subsequently emotional attitudes (e.g., intimacy). These separate effects can then be equalized, modified, or combined with other elements for the final sound design that is cut in synchronization to the picture. The design of specific effects is always a process of addressing the needs of the narrative, addressing the images on the screen, and involving the sensibilities of the sound designer.

Foley is also one of the processes that occur during postproduction. Foley involves recreating sounds or simulating sounds while viewing the projected image. Traditionally, Foley has concentrated on footsteps and the physical movements of characters. With digital editing systems and the vast availability of tracks, Foley can customize all types of sounds from rustles of clothing to tapping of fingers. Foley adds to the layers of sound design, offering psychological anchors of sound that support the illusion of realism through synchronization and specificity of objects and actions.

Music production entails its own set of production processes and considerations, which will only be touched on here. As with sound effects, a film is spotted for placement and appropriateness in the narrative. A director may discuss in detail with the composer the emotional nature of various scenes and preferences related to orchestration and

organization of cues. In the best cases, sound designs are included in these discussions and agreements can be made related to overall organization of dialogue and sound effects in relation to music. The sound designer can work with a composer to avoid overlapping of similar material in terms of rhythm or frequency. This preplanning ensures that sound and music do not conflict technically or aesthetically. For instance, a scene with a shootout would need to be carefully scored and edited so that drums within the score do not conflict with the sound effects of gunshots and explosions. Ideally, a rhythm between the elements would be established through planning.

During the mixing process, the assembled elements are brought to the mixing or dubbing stage to be combined into the final sound track of the film (or sound tracks—given the different types of formats). Generally, on large budget films, there is one mixer for every level of sound—dialogue, music, and effects. The dialogue mixer leads the team in the mix process in consultation with the sound supervisor and director. As the picture is projected on the screen, the mixers work through the various layers of sound, folding them down to make them more manageable. Effects, equalization, and other electronic manipulation occur during the various passes or premixes. Special attention is paid to dialogue to ensure intelligibility and clarity in terms of the narrative and accompanying action.

The mixing of a film involves the focusing of the various layers of sound elements and finding the proper balance according to the needs of the narrative. This process is the final design of the sound track. There are a number of distribution considerations that are part of the final mix of a film. One important aspect is the foreign release, which requires that music and effects tracks be premixed separately so that a dubbed dialogue track can be folded into the final mix. While rare in the United States, dubbing is a standard in most other countries. In addition, mixers must address the issues of the various distribution formats, which involve choices about placement of surround material and the limitations of the various mediums. These factors are determined in part by the patterns of release for the final film, because specific formats will be needed for specific screening venues. A special mix may even be done for video and DVD releases. Finally, sound sets may also be shared with companies producing ancillary products related to a theatrical release (games, websites, and commercial products, among others).

Notes

INTRODUCTION

1. Gary Rydstrom, "Sound Design," Lecture at University of Southern California, Los Angeles, California, March 23, 2004.

2. Brooks Landon, *Science Fiction After 1900: From the Steam Man to the Stars* (New York: Routledge, 2002), xiv.

3. Ibid., xii.

4. Ibid., 7.

5. Michael Pye and Lynda Myles, *The Movie Brats* (New York: Holt, Rinehart and Winston, 1979). Pye and Myles list the "Brats" as Francis Ford Coppola, George Lucas, Brian DePalma, John Milius, Martin Scorsese, and Steven Spielberg. In retrospect, the list should also include Robert Altman, William Friedkin, Michael Cimino, and John Carpenter, among others. Also, Thomas Schatz, "The New Hollywood," in *Film Theory Goes To The Movies*, edited by Jim Collins, Hilary Radner, and Ava Preacher Collins (New York: Routledge, 1993), 8–36. The "New Hollywood" is defined by trends and practices of the Hollywood entertainment industry in the mid-1970s, which includes economic models based on the production of high-tech blockbusters, expanded marketing and exhibition strategies (saturation theater booking and screenings on cable television as well as the rise of new media formats such as home video), and the introduction of new filmmaking practices centered on genre convergence, new technologies, and experiments in audio and visual style.

6. Schatz, "The New Hollywood," 8–36.

7. Amy Lehr, "Sound in Film Theory: The Pattern of Attack and Neglect," master's thesis, University of Southern California, 1985, 1.

8. Rick Altman, ed., *Yale French Studies, Cinema/Sound*, 60 (1980), and Rick Altman, ed., *Sound Theory Sound Practice* (New York: Routledge, 1992).

9. Mary Anne Doane, "The Voice in the Cinema: The Articulation of Body and Space," *Yale French Studies, Cinema/Sound*, 60 (1980), 33–50.

10. Rick Altman, "Introduction: Cinema as Event," *Sound Theory Sound Practice* (New York: Routledge, 1992), 1–14.

11. James Lastra, "Reading, Writing, and Representing Sound," in *Sound Theory Sound Practice*, edited by Rick Altman (New York: Routledge, 1992), 65–86.

12. Amy Lawrence, *Echo and Narcissus: Women's Voices in Classical Hollywood Cinema* (Berkeley: University of California Press, 1991).

13. John Belton, "1950's Magnetic Sound: The Frozen Revolution," in *Sound Theory Sound Practice*, ed. Rick Altman (New York: Routledge, 1992), 154–67.

14. Tomlinson Holman, *Sound for Film and Television* (Boston: Focal Press, 2002).

15. Vincent LoBrutto, *Sound-on-Film: Interviews with Creators of Film Sound* (Westport, Conn.: Praeger, 1994).

16. Vivian Sobchack, *Screening Space: The American Science Fiction Film* (New Brunswick, N.J.: Rutgers University Press, 2001).

17. Scott Bukatman, *Terminal Identity: The Virtual Subject in Postmodern Science Fiction* (Durham, N.C.: Duke University Press, 1993).

18. Donna Haraway, "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980's," *Socialist Review*, 80 (1985), 65–107.

19. Linda Williams, "Film Bodies: Gender, Genre and Excess," *Film Quarterly*, 44, 4 (summer 1991), 2–13.

20. Tzvetan Todorov, *The Fantastic: A Structural Approach to Literary Genre* (Ithaca, N.Y.: Cornell Paperbacks, 1989).

21. Jerome Agel, ed., *The Making of Kubrick's 2001* (New York: Signet, 1970) and Paul M. Sammon, *Future Noir: The Making of Blade Runner* (New York: HarperPrism, 1996).

CHAPTER 1

1. Jerome Agel, ed., *The Making of Kubrick's 2001* (New York: Signet, 1970), 78.

2. Paul Monaco, *History of American Film: The Sixties* (New York: Charles Scribner's Sons, 2001), 194–96.

3. Vivian Sobchack, *Screening Space: The American Science Fiction Film* (New Brunswick, N.J.: Rutgers University Press, 2001), 215.

4. Jordan Fox, "Walter Murch: Making Beaches Out of Grains of Sand," *Cinefex*, 3 (1980), 55.

5. Larry Blake, "The Evolution and Utilization of 70mm Six-Track Film Sound: Stereophonic Reproduction in Movie Theaters," in *Film Sound Today* (Hollywood: Reveille, 1984), 28–29. Blake writes, "The most extensive use of surround channels was for *Apocalypse Now*, the first film to be released in the Dolby 70mm 'split-surround' format. The split format utilizes the free high frequency information space about 500 Hz on tracks #2 and #4 of Dolby 70mm prints, in conjunction with information below 500 Hz on the standard surround information on track #6. This provides, in essence, a quadraphonic effect from a 70mm print, while retaining compatible playback with standard Dolby 70mm equipment."

6. Vincent LoBrutto, *Sound-on-Film: Interviews with Creators of Film Sound* (Westport, Conn.: Praeger, 1994), 91–92.

7. "The Valkyrie" was composed by Wagner in Munich in 1870 (as part of the larger work "The Ring of the Nibelung") and refers to the wild horsewomen of the air, who carried the bodies of dead warriors to Valhalla, the Home of the Gods. The selection of the piece comments on the attitudes of the military and ultimately Kurtz, who is a product of this mentality. He (like the military) positions himself as a god-man based on his ability to kill and control those around him.

8. Fox, "Walter Murch," 52.

9. James Lastra, *Sound Technology and the American Cinema: Perception, Representation, and Modernity* (New York: Columbia University Press, 2000), 170–71. According to Lastra, jurisdictional disagreements related to sound began with the introduction of sound to cinema. For instance, he identifies one site of tension around "craft" standards and the aesthetic needs of the filmmaking process. Sound personnel tended toward maintaining their own set of professional standards, often based on engineering, over the requests of directors as a

means of "avoiding loss of prestige and workplace autonomy." These same types of disagreements play out today, as Holman's work identifies.

10. David Chell, ed., *Moviemakers at Work* (Redmond, Wash.: Microsoft Press, 1987), 107.

11. Ibid., 108.

12. Tomlinson Holman, *Sound for Film and Television* (Boston: Focal Press, 2002), 172.

13. Consent Decree Summary, in the USC Warner Bros. Archives.

14. Memo, in the USC Warner Bros. Archives.

15. THX Website (1997), http://www.THX.com (accessed July 7, 1997).

16. David Bordwell, Janet Staiger, and Kristin Thompson, *The Classical Hollywood Cinema: Film Style and Mode of Production to 1960* (New York: Columbia University Press, 1985), 370.

17. Thomas Schatz, "The New Hollywood," In *Film Theory Goes To the Movies*, edited by Jim Collins, Hilary Radner, and Ava Preacher Collins (New York: Routledge, 1993), 15.

18. Ibid.

19. Leonard Quart and Albert Auster, *American Film and Society since 1945* (New York: Praeger, 1991), 109.

20. Kudelski S.A. Nagra Website (1997), http://www.nagra.com (accessed July 7, 1997).

21. Jeff Forlenza and Terri Stone, eds., *Sound For Picture: An Inside Look at Audio Production for Film and Television* (Emeryville, Calif.: Mixbooks, 1993), 17.

22. Michael Pye and Lynda Myles, *The Movie Brats* (New York: Holt, Rinehart, and Winston, 1979), 54.

23. Ibid., 87.

24. Ibid., 58.

25. Christopher H. Sterling and John M. Kittross, *Stay Tuned: A Concise History of American Broadcasting* (Belmont, Calif.: Waddsworth Publishing, 1978), 250.

26. Ibid., 251.

27. Ibid.

28. Ibid., 352.

29. John Belton, "1950's Magnetic Sound: The Frozen Revolution," in *Sound Theory Sound Practice*, ed. Rick Altman (New York: Routledge, 1992), 164.

30. Robert Palmer, *Rock and Roll* (New York: Harmony Books, 1995), 40.

31. Gerald Mast, *A Short History of the Movies* (Indianapolis: Bobbs-Merrill, 1981), 421.

CHAPTER 2

1. Jerome Agel, ed., *The Making of Kubrick's 2001* (New York: Signet, 1970), 367.

2. Howard Suber, "2001: A Space Odyssey," liner notes, Criterion Collection, *2001: A Space Odyssey*, Laserdisc (Los Angeles: Voyager Company, 1990), 1.

3. Percy A. Scholes, *The Oxford Companion to Music* (New York: Oxford University Press, 1938), 1005.

4. Ibid.

5. David Bordwell, Janet Staiger, and Kristin Thompson, *The Classical Hollywood Cinema* (New York: Columbia University Press, 1985), supplemental section, figure 12.16.

6. Ibid., 33–34.

7. Ibid.

8. Ibid, 34.

9. Fred Karlin, *Listening to Movies* (New York: Schirmer Books, 1994), 67–84.

10. Vivian Sobchack, *Screening Space: The American Science Fiction Film* (New Brunswick, N.J.: Rutgers University Press, 2001), 212–13.

11. Vincent LoBrutto, *Stanley Kubrick: A Biography* (New York: Donald I. Fine Books, 1997), 305.

12. Robert Townson, "The Odyssey of Alex North's *2001*," liner notes from *Alex North's 2001: Unused Soundtrack Score*, CD, 1.

13. Agel, *The Making of Kubrick's 2001*, 6–7.

14. Ibid., 88.

15. Liner notes from recording of *2001: A Space Odyssey*. EMI CDP 7933022.

16. Michel Ciment, "The Odyssey of Stanley Kubrick: Part 3: Toward the Infinite—2001," in *Focus On the Science Fiction Film*, ed. William Johnson (Englewood Cliffs, N.J.: Prentice-Hall, 1972), 137.

17. Ibid., 136.

18. Ibid., 138.

19. Arthur C. Clarke, "Introduction: Hal's Legacy," in *Hal's Legacy: 2001's Computer As Dream and Reality*, ed. David G. Stork (Cambridge, Mass.: MIT Press, 1997), xiv.

20. Ibid.

CHAPTER 3

1. Vincent LoBrutto, *Sound-on-Film: Interviews with Creators of Film Sound* (Westport, Conn.: Praeger, 1994), 84.

2. *THX 1138: The George Lucas Director's Cut*, "A Legacy of Filmmakers: The Early Years of American Zoetrope," 2004.

3. Behrouz Saba, "Walter Murch," in *Hollywood: The New Breed*, University of Southern California, Cinema-Television Library, Neal Graham Collection, clipping file on *Walter Murch*, n.d., 11.

4. Thomas Schatz, "The New Hollywood," in *Film Theory Goes To the Movies*, edited by Jim Collins, Hilary Radner, and Ava Preacher Collins (New York: Routledge, 1993), 15. Estimates for losses fall between the years 1969–1971, as estimated by *Variety*.

5. Michael Pye and Lynda Myles, *The Movie Brats* (New York: Holt, Rinehart, and Winston, 1979), 101.

6. Dale Pollack, *Skywalking: The Life and Films of George Lucas, the Creator of Star Wars* (New York: Ballantine Books, 1983), 49.

7. *THX 1138: The George Lucas Director's Cut*.

8. Peter Graham, "New Directions in French Cinema," in *The Oxford History of World Cinema*, ed. Geoffrey Nowell-Smith (New York: Oxford University Press, 1996), 576.

9. Vinay Shrivastava, "Technical and Theoretical Analysis of Cinematic Sound," Ph.D. dissertation, University of Southern California, 1990, 182.

10. J. Dudley Andrew, *The Major Film Theories* (New York: Oxford University Press, 1976), 53.

11. Saba, "Walter Murch," 11.

12. Peter Wollen, "Godard and Counter Cinema: VENT D'EST," in *Movies and Methods*, Vol. 2, edited by Bill Nichols (Berkeley: University of California Press, 1985), 508.

13. Saba, "Walter Murch," 12.

14. Jordon Fox, "Walter Murch: Making Beaches Out of Grains of Sand," *Cinefex*, 3 (1980), 43.

15. David Bordwell, Janet Staiger, and Kristin Thompson, *The Classical Hollywood Cinema* (New York: Columbia University Press, 1985), 372.

16. James Lastra, *Sound Technology and The American Cinema: Perception, Representation, and Modernity* (New York: Columbia University Press, 2000), 179. The hierarchy of sound labor comes after a long period of sound personnel negotiating their status and iden-

tity within the studio system around issues of "fidelity" and "representational correctness." Lastra argues, "Only after sound technicians conformed their standards and their senses of professional identity and success to standards compatible with the success of their new corporate employers [the Hollywood Studios], could sound engineering become an integral part of the Hollywood system" (179).

17. Union Classifications Document, in the USC Warner Bros. Archives, 21.

18. Jeff Forlenza and Terri Stone, eds. *Sound For Picture: An Inside Look at Audio Production for Film and Television* (Emeryville, Calif.: Mixbooks, 1993), 13.

19. *THX 1138: The George Lucas Director's Cut*.

20. Fox, "Walter Murch," 44.

21. Production Notes for *THX 1138*, in the USC Cinema-Television Library, Press Kit Clipping Files on *THX 1138*, 3.

22. Lobrutto, *Sound-on-Film*, 84.

23. Fox, "Walter Murch," 43.

24. Transcripts from USC Cinema Course, in the USC Cinema-Television Library, Clipping Files on *Walter Murch*, November 15, 1982.

25. LoBrutto, *Sound-on-Film*, 85.

CHAPTER 4

1. Vincent LoBrutto, *Sound-on-Film: Interviews with Creators of Film Sound* (Westport, Conn.: Praeger, 1994), 85.

2. Warner Bros. did re-release *THX 1138* following the success of *Star Wars*, but, again, the film failed to reach its audience. It has, however, become a cult classic on laser disk and video as well as the revival house circuit, particularly in France.

3. *THX 1138* Pressbook, in the USC Warner Bros. Archives, 6.

4. *THX 1138* Pressbook, 9.

5. Transcripts from USC Cinema Course, in the USC Cinema-Television Library, Clipping Files on *Walter Murch*, November 15, 1982.

6. Craig W. Anderson, *Science Fiction of the Seventies* (Jefferson, N.C.: McFarland & Company, 1986), 25.

7. Scott Bukatman, *Terminal Identity: The Virtual Subject in Postmodern Science Fiction* (Durham, N.C.: Duke University Press, 1993), 3.

8. *THX 1138* Pressbook, 9.

9. Ibid.

10. Vivian Sobchack, *Screening Space: The American Science Fiction Film* (New Brunswick, N.J.: Rutgers University Press, 2001), 196.

11. Dale Pollack, *Skywalking: The Life and Films of George Lucas, the Creator of Star Wars* (New York: Ballantine Books, 1983), 102.

12. Ibid.

13. Ibid., 86.

CHAPTER 5

1. Vincent LoBrutto, *Sound-on-Film: Interviews with Creators of Film Sound* (Westport, Conn.: Praeger, 1994), 142.

2. Geoff King, "Spectacle, Narrative and the Blockbuster," in *Movie Blockbusters*, edited by Julian Stringer (New York: Routledge, 2003), 118. The similarities of the spectacles of the New

Hollywood to the musicals of the 1930s cannot be overlooked. As King notes, Richard Dyers case studies on the musical provide a "useful vocabulary" to talk about blockbuster spectacles.

3. Christian Metz, *L'Enonciation impersonnelle, ou le site du film* (Paris: Méridiens Klincksieck, 1991), 161.

4. Walter Murch, Lecture/Book Signing for *In the Blink of an Eye*, Midnight Bookstore, Santa Monica, California, January 28, 1996.

5. Béla Belázs, *Theory of the Film: Character and Growth of a New Art* (New York: Dover, 1970), 216.

6. Alan Williams, "Is Sound Recording Like a Language?" *Yale French Studies, Cinema/Sound,* 60, 52.

7. James Lastra, "Reading, Writing, and Representing Sound," in *Sound Theory Sound Practice*, ed. Rick Altman (New York: Routledge, 1992), 86. Lastra notes that all sound is constructed by a matrix of factors—acoustical, cultural, and technological. As with the film sound track itself, it is difficult (if not impossible) to advocate for an "original" sound.

8. Tomlinson Holman, "Sound for Pictures," Reprint for USC Sound Department (Boston: Focal Press, 1992), 3.

9. John Belton, "Technology and Aesthetics of Film Sound," in *Film Theory and Criticism*, edited by Gerald Mast, Marshall Cohen, and Leo Braudy (New York: Oxford University Press, 1992), 326.

10. Jeff Forlenza and Terri Stone, eds., *Sound for Picture: An Inside Look at Audio Production for Film and Television* (Emeryville, Calif.: Mixbooks, 1993), 5.

11. Tzvetan Todorov, *The Fantastic: A Structural Approach to Literary Genre* (Ithaca, N.Y.: Cornell Paperbacks, 1989), 26.

12. Larry Blake, *Film Sound Today* (Hollywood, Calif.: Reveille, 1984), 35.

13. Kudelski S.A. Nagra Website (1997), http://www.nagra.com (accessed July 7, 1997).

14. Many of the raw effects for *Star Wars* were collected in Southern California, and premixes were done in Burtt's apartment near the University of Southern California campus.

15. Alan Arnold, "Once upon a Galaxy: A Journal of the Making of *The Empire Strikes Back*," University of Southern California, Cinema-Television Library, Clipping Files on *The Empire Strikes Back*, 256.

16. LoBrutto, *Sound-on-Film*, 88.

17. Blake, *Film Sound Today*, 35.

18. Arnold, "Once upon a Galaxy," 256.

19. Dale Pollack, *Skywalking: The Life and Films of George Lucas, the Creator of Star Wars* (New York: Ballantine Books, 1983), 195–96.

20. Belton, "Technology and Aesthetics of Film Sound,"326.

21. Arnold, "Once upon a Galaxy," 255.

22. LoBrutto, *Sound-on-Film*, 142.

23. Ibid., 143–144.

24. Ibid.

25. Blake, *Film Sound Today*, 35.

26. Forlenza and Stone, *Sound for Picture*, 4.

27. John Haeny, Lecture for University of Southern California at Todd-AO/Glen Glenn, Hollywood, California, 1996.

28. LoBrutto, *Sound-on-Film*, 139.

29. Metz, *L'Enonciation impersonnelle*, 161.

CHAPTER 6

1. John F. Allen, "Dolby: 30 Years of Sound Ideas," *Boxoffice* (June 1995), 22.

2. Dolby Website (1996), http://www.dolby.com/index.html (accessed March 4, 1996). The Dolby chronology indicates, "Dolby Stereo optical soundtrack format introduced at Society of Motion Picture and Television Engineers (SMPTE) convention in Toronto using specially re-mixed section of *Stardust*. Advantages include performance comparable to older 35 mm magnetic process at considerably less cost to producers, distributors, exhibitors."

3. Dolby Website (1996; accessed March 4, 1996).

4. Ray Greene, "Noises Off: Celebrating 30 Years of Sound Ideas with Ray Dolby of Dolby Laboratories," *Boxoffice* (June 1995), 20–23.

5. John Belton, "1950's Magnetic Sound: The Frozen Revolution," in *Sound Theory Sound Practice*, edited by Rick Altman (New York: Routledge, 1992), 154–67.

6. Mary Anne Doane, "The Voice in the Cinema: The Articulation of Body and Space," in *Yale French Studies, Cinema/Sound*, 60, 35.

7. Ibid.

8. John Belton, "Technology and Aesthetics of Film Sound," in *Film Sound*, edited by Elisabeth Weis and John Belton (New York: Columbia University Press, 1985), 63.

9. John Belton, "1950's Magnetic Sound: The Frozen Revolution," *Sound Theory Sound Practice*, ed. Rick Altman (New York: Routledge, 1992), 158.

10. Jerome Agel, ed., *The Making of Kubrick's 2001* (New York: Signet, 1970), 300.

11. Vincent LoBrutto, *Sound-on-Film: Interviews with Creators of Film Sound* (Westport, Conn.: Praeger, 1994), 86.

12. Tzvetan Todorov, *The Fantastic: A Structural Approach to Literary Genre* (Ithaca, N.Y.: Cornell Paperbacks, 1989), 26. Once again, the concept of "hesitation" that Todorov notes can be repurposed for construction and reading protocol within the science fiction genre.

13. Agel, *The Making of Kubrick's 2001*, 328.

14. Vivian Sobchack, *Screening Space: The American Science Fiction Film* (New Brunswick, N.J.: Rutgers University Press, 2001), 228.

15. Ibid., 255.

16. Tom Gunning, "The Cinema of Attraction: Early Film, Its Spectator and the Avant-Garde," In *Early Cinema: Space, Frame, Narrative*, edited by Thomas Elsaesser (London: BFI, 1986), 61.

17. Sobchack, *Screening Space*, 282.

18. Larry Blake, *Film Sound Today* (Hollywood, Calif.: Reveille, 1984), 5. Mixer Bill Varney offers his strategies on mixing in Dolby Stereo format.

19. Sobchack, *Screening Space*, 218.

CHAPTER 7

1. Michael Seymour, "Out-of-this-World Production Design," *American Cinematographer* (August 1979), 804. "Something like *Star Wars*, which is a very beautiful and complex piece of design, was, we felt, more cosmetic. . . . We were trying to approach our subject [*Alien*] in a much more workaday way."

2. Films from this cycle include, but are not limited to, *Lifeforce* (1985), *Critters* (1986), *The Hidden* (1987), *Leviathan* (1989), *Species* (1995), and *Mimic* (1997), as well as the *Alien* sequels.

3. Robbie Robertson, "The Narrative Sources of Ridley Scott's Alien," in *Cinema and Fiction*, edited by John Orr and Colin Nicholson (Edinburgh: Edinburgh University Press, 1992), 175.

4. Linda Williams, "Film Bodies: Gender, Genre and Excess," *Film Quarterly*, 44, 4 (summer 1991), 3.

5. Tony Thomas, *Film Score: The Art and Craft of Movie Music* (Burbank, Calif.: Riverwood Press, 1991), 96.

6. Ibid., 93.

7. Williams, "Film Bodies," 3. Altman is specifically talking about melodrama, which Williams expands to include the horror genre.

8. Thomas, *Film Score*, 95.

9. Tzvetan Todorov, *The Fantastic: A Structural Approach to Literary Genre* (Ithaca, N.Y.: Cornell Paperbacks, 1989), 27.

10. Rick Altman, *Film/Genre* (London: BFI Publishing, 2003), 142.

11. Ibid.

12. Robin Wood, *Hollywood from Vietnam to Reagan* (New York: Columbia University Press, 1986), 46.

13. Marsha Kinder and Beverle Houston, "Seeing is Believing: The Exorcist and Don't Look Now," in *American Horrors: Essays on the Modern American Horror Film*, edited by Gregory A. Waller (Chicago: University of Illinois Press, 1987), 47. Silence also exemplifies Father Merrin as a character in general. "He's the archetypal silent man; we recognize him from genres like the western. . . . Instead of talking, he acts. As Merrin says in the last line of the opening sequence: 'There's something I must do.'" This sets him in contrast with the other priest, Father Karras, in the film.

14. Bashkar Sarkar, "Sound Bites: Fragments on Cinema, Sound, Subjectivity," *University of Southern California Journal of Film and Television Criticism: Spectator: Audio-Vision*, ed. Mary Kearney, 17, 2 (spring/summer 1997), 30.

15. Williams, "Film Bodies," 5.

16. Todorov, *The Fantastic*, 34–35.

17. Susan Sontag, "Imagination of Disaster," *Against Interpretation and Other Essays* (New York: Octagon Books, 1986), 218.

18. Williams, "Film Bodies," 4. Williams specifically targets this perceptual matching as associated with the female body. This model though easily extends to the male body in "creature" films such as *American Werewolf in London* (1981) or *Wolf* (1994), in which the male protagonists transform in a spectacle of excess (and hair).

19. Robert L. Mott, *Sound Effects: Radio, TV, and Film* (Stoneham, Mass.: Focal Press, 1990), 192.

20. Ibid., 192.

21. John Belton, "Technology and Aesthetics of Film Sound," in *Film Theory and Criticism*, edited by Gerald Mast, Marshall Cohen, and Leo Braudy (New York: Oxford University Press, 1992), 325–26.

22. Donna Haraway, "A Manifesto for Cyborgs: Science, Technology and Socialist Feminism in the 1980s," *Socialist Review*, 15, 2 (March–April 1985), 68.

23. Ibid.

24. Sarkar, "Sound Bites," 28.

25. Ibid., 21.

CHAPTER 8

1. The fifth installment of the *Alien* series was inspired by the popular videogame and graphic novel *Alien vs. Predator*. This trend is significant in that it reveals the changing landscape of entertainment economics.

2. Marvin M. Kerner, *The Art of the Sound Effects Editor* (Boston: Focal Press, 1989), 11.

3. Amy Lawrence, *Echo and Narcissus: Women's Voices in Classical Hollywood Cinema* (Berkeley: University of California Press, 1991), 20.

4. Ibid., 21.

5. Texts such as Tomlinson Holman's *Sound for Film and Television* (Focal Press, 1997) have included CDs as appendices. This trend will undoubtedly continue and expand to the inclusion of interactive formats such as CD ROMs or DVDs.

6. Alan Williams, "Is Sound Recording Like a Language?" *Yale French Studies, Cinema/Sound,* 60, 58.

7. Nigel Andrews and Harlan Kennedy, "Space Gothic," *American Film* (March 1979), 22.

8. Barbara Creed, "Horror and the Monstrous-Feminine: An Imaginary Abjection," *Fantasy and The Cinema*, edited by James Donald (London: BFI Publishing, 1989), 64.

9. Ridley Scott, "The Filming of *ALIEN*," *American Cinematographer* (August 1979), 810.

10. Creed, "Horror and Monstrous Feminine," 68.

11. Ibid., 83.

12. Harvey R. Greenberg, "Reimagining the Gargoyle: Psychoanalytical Notes on Alien," *Camera Obscura: A Journal of Feminism and Film Theory* (1986), 93.

13. Ibid., 94.

14. Ibid., 96.

15. Ibid., 97.

16. Ibid., 100.

17. Linda Williams, "Film Bodies: Gender, Genre and Excess," in *Film Quarterly*, 44, 4 (summer 1991), 4.

18. Ibid., 5.

19. Carol J. Clover, *Men, Women and Chainsaws: Gender in the Modern Horror Film* (Princeton, N.J.: Princeton University Press, 1992), 35. Clover notes that the "final girl" in horror films "is abject terror personified"; however, she often shows "more courage and level-headedness than her cringing male counterpart" (36). The Ripley character recontextualizes the notion of the "final girl" within a science fiction framework, redefining her more clearly as heroic.

20. Kaja Silverman, *The Acoustic Mirror: The Female Voice in Psychoanalysis and Cinema* (Bloomington: Indiana University Press, 1988), 45.

21. Annette Kuhn, "Invading Bodies," *Sight and Sound* (July 1992), 9.

22. Ibid.

CHAPTER 9

1. Paul M. Sammon, *Future Noir: The Making of Blade Runner* (New York: HarperPrism, 1996), and Judith B. Kerman, ed., *Retrofitting Blade Runner: Issues in Ridley Scott's Blade Runner and Philip K. Dick's Do Androids Dream of Electric Sheep?* (Bowling Green, Ohio: Bowling Green State University Popular Press, 1991).

2. Sammon, *Future Noir*, 294.

3. Ibid., 270.

4. Kaja Silverman, *The Acoustic Mirror: The Female Voice in Psychoanalysis and Cinema* (Bloomington: Indiana University Press, 1988), 52.

5. Sammon, *Future Noir*, 296.

6. Ibid., 388.

7. Ibid.

8. James Lastra, *Sound Technology and the American Cinema: Perception, Representation, and Modernity* (New York: Columbia University Press, 2000), 184–215. In his chapter "Sound Space and Classical Narrative," Lastra more fully examines the history of the voice and intelligibility issues as they relate to narrative, representation, and technology.

9. John Belton, "Technology and Aesthetics of Film Sound," in *Film Theory and Criticism*, edited by Gerald Mast, Marshall Cohen, and Leo Braudy (New York: Oxford University Press, 1992), 328.

10. John Haeny, Lecture for University of Southern California at Todd-AO/Glen Glenn, Hollywood, California, 1996.

11. Silverman, *The Acoustic Mirror*, 45.

12. Ibid., 44.

13. Ibid., 48.

14. Marleen Barr, "Metahuman 'Kipple'; Or, Do Male Movie Makers Dream of Electric Women? Speciesism and Sexism," in *Retrofitting Blade Runner: Issues in Ridley Scott's Blade Runner and Philip K. Dick's Do Androids Dream of Electric Sheep?* edited by Judith B. Kerman (Bowling Green, Ohio: Bowling Green State University Popular Press, 1991), 27.

15. Celeste Olalquiaga, *Megalopolis* (Minneapolis: University of Minnesota Press, 1994), 11.

16. Forest Pyle, "Making Cyborgs, Making Humans: Of *Terminators* and *Blade Runners*," in *Film Theory Goes to the Movies*, eds. Jim Collins, Hilary Radner, and Ava Preacher Collins (New York: Routledge, 1993), 228.

17. David Tobenkin, "Re-releasing 'Blade Runner' Proved to Be a Smart Move," *Minneapolis Star Tribune*, September 29, 1992.

18. Scott Bukatman, *Terminal Identity: The Virtual Subject in Postmodern Science Fiction* (Durham, N.C.: Duke University Press, 1993), 132.

19. Ibid., 132–33.

CHAPTER 10

1. These film sound formats and their advertisements reveal the transition from analog to digital sound, which has now become part of the exhibition environment (and a marketing sales point) in contemporary Hollywood cinema. In addition, the trend toward saturation marketing (releasing films to two thousand or more theaters) facilitated upgrades in audio systems in theaters throughout the country.

2. Geoff King, "Spectacle, Narrative and the Spectacular Hollywood Blockbuster," in *Movie Blockbusters*, edited by Julian Stringer (New York: Routledge, 2003), 122.

3. Ibid.

4. Gianluca Sergi, "A Cry in the Dark: The Role of Post-classical Film Sound," in *Contemporary Hollywood Cinema*, edited by Steve Neale and Murray Smith (New York: Routledge, 2000.

5. Ibid.

6. Mary Anne Doane, "Ideology and the Practice of Sound Editing and Mixing," in *Film Sound*, edited by Elisabeth Weis and John Belton (New York: Columbia University Press, 1985), 55.

7. Marvin M. Kerner, *The Art of the Sound Effects Editor* (Boston: Focal Press, 1989), 12. According to the author, the equation drawn for creating a specific sound effect is "1 Effect = Illusion + Mood." The codification of sound as "magic" is equally utilized to deemphasize sound processes and practices.

8. Doane, "Ideology," 55. The voice, however, does counter this sense of aural mystery.

9. Ibid., 58.

10. Ibid., 54–55.

11. Tomlinson Holman, *Sound for Film and Television*, (Boston: Focal Press, 2002), 38.

12. Ibid.

13. Doane, "Ideology," 56.

14. Vincent LoBrutto, *Sound-on-Film: Interviews with Creators of Film Sound* (Westport, Conn.: Praeger, 1994), 234–35.

15. Holman, *Sound for Film and Television*, 44.

16. Jeff Forlenza and Terri Stone, eds., *Sound For Picture: An Inside Look at Audio Production for Film and Television* (Emeryville, Calif.: Mixbooks, 1993), 35.

17. Ibid., 34.

18. Ibid.

19. John Belton, "Technology and Aesthetics of Film Sound," in *Film Sound*, edited by Elisabeth Weis and John Belton (New York: Columbia University Press, 1985), 63.

20. Forlenza and Stone, *Sound for Picture*, 30.

21. Ibid.

22. Ibid., 31.

23. Ibid.

24. Walter Murch, Lecture/Book Signing for *In the Blink of an Eye*, Midnight Bookstore, Santa Monica, California, January 28, 1996.

25. LoBrutto, *Sound-on-Film*, 233.

26. Ibid., 234.

27. Rick Altman, "Sound Space," in *Sound Theory Sound Practice*, edited by Rick Altman (New York: Routledge, 1992), 61.

CHAPTER 11

1. Vivian Sobchack, *Screening Space: The American Science Fiction Film* (New Brunswick, N.J.: Rutgers University Press, 2001), 218.

2. Jeff Forlenza and Terri Stone, eds., *Sound for Picture: An Inside Look at Audio Production for Film and Television* (Emeryville, Calif.: Mixbooks, 1993), 33.

3. Fredric Jameson, "Progress Versus Utopia; or, Can We Imagine the Future?" *Science-Fiction Studies*, 9 (1982), 151.

4. Ibid.

5. Kaja Silverman, *The Acoustic Mirror: The Female Voice in Psychoanalysis and Cinema* (Bloomington: Indiana University Press, 1988), 45.

6. Mary Ann Doane, "The Voice in the Cinema: The Articulation of Body and Space," in *Yale French Studies, Cinema/Sound*, 60, 34.

7. Thomas Schatz, "The New Hollywood," in *Film Theory Goes To The Movies*, edited by Jim Collins, Hilary Radner, and Ava Preacher Collins (New York: Routledge, 1993), 33–34.

8. Sobchack, *Screening Space*, 215.

9. Forlenza and Stone, *Sound for Picture*, 33.

10. Stuart M. Kaminsky, *American Film Genres* (Chicago: Nelson-Hall, 1985), 130.

11. Vincent LoBrutto, *Sound-on-Film: Interviews with Creators of Film Sound* (Westport, Conn.: Praeger, 1994), 234.

12. Sobchack, *Screening Space*, 219.

13. Donna Haraway, "A Manifesto for Cyborgs: Science, Technology, and Socialist Feminism in the 1980's," *Socialist Review*, 80 (1985), 65–107.

14. Constance Penley, "Time Travel, Primal Scene and Critical Dystopia," in *Alien Zone: Cultural Theory and Contemporary Science Fiction Cinema*, edited by Annette Kuhn (New York: Verso, 1990), 119.

15. LoBrutto, *Sound-on-Film*, 237.

CHAPTER 12

1. Home Design Issue, *Los Angeles Times Magazine*, September 26, 2004.

2. Ibid.

3. Ibid.

4. "The 'Oh My God!' Effect," *Los Angeles Times Magazine*, September 26, 2004, page 24.

5. CEA Website (1996), http://www.ce.org (accessed March 4, 1996).

6. David Sonnenschein. *Sound Design: The Expressive Power of Music, Voice and Sound Effects in Cinema* (Los Angeles: Michael Wiese Productions, 2001), 154.

7. Ibid., 200.

8. John Belton, *Widescreen Cinema* (Cambridge, Mass.: Harvard University Press, 1992), 31.

9. Ibid., 32.

10. Spencer Lamm, ed., *The Art of The Matrix* (New York: Newmarket Press, 2000), 456.

11. This tag can be found as part of the trailer of a number of studios promoting DVD consumption, including releases by Warner Bros. and MGM.

12. Miriam Hansen, "Early Cinema, Late Cinema: Transformation of the Public Sphere," in *Viewing Positions: Ways of Seeing Film*, edited by Linda Williams (New Brunswick, N.J.: Rutgers University Press, 1995), 135.

13. *The Matrix Revisited*, 2001.

14. Ibid.

15. "An Interview with the Game Developers," http://www.soundblaster.com/etm/interview.asp (accessed November 30, 2004).

16. *The Matrix Reloaded*, 2003.

17. Mary Anne Doane, "The Voice in the Cinema: The Articulation of Body and Space," in *Film Sound*, edited by Elisabeth Weis and John Belton (New York: Columbia University Press, 1985), 167.

18. Science fiction conventions allow games to experiment with narrative time as well, promoting concurrent or parallel actions and storylines. So there is not only an expansion of off-screen space but also of on-screen time.

19. Matthew Kapell and William G. Doty, eds., *Jacking In to The Matrix Franchise: Cultural Reception and Interpretation* (New York: Continuum, 2004), 1.

20. *The Matrix Reloaded*, 2003.

21. Ibid.

22. "An Interview with the Game Developers," http://www.soundblaster.com/etm/interview.asp (accessed November 30, 2004).

Glossary

Automated Dialogue Replacement (ADR): A system for replacing production dialogue that may be unusable or may require varied dramatic emphasis. Performers view projected images and try to match vocal qualities and synchronization.

Ambience: Also *Backgrounds*. Layers of background noises, often forming environmental aspects such as a busy street noise or waves on a beach. May be considered the equivalent of a sonic long shot, establishing a sense of place.

Backgrounds: See *Ambience*.

Bass: Low-frequency signals.

Boom: A "fishing-pole" device that allows a microphone to be extended or lowered into a scene or toward the sound source that is being recorded.

Boom Channel: Refers to low-frequency signal sent to bass speakers.

Boom Operator: A sound technician who operates and directs the overhead boom and microphone.

Channel: A stream of the sound signal into a speaker, processing device or mixing apparatus, for example.

Cue Sheet: A formalized layout of the various sound elements annotated according to footage count, quality of recording, and track location. This layout is used by a sound mixer to coordinate the blending of the final sound track.

Diegesis: The world of the film story, which includes the reach of both the image and sound. It is important to note that sound effects within the surround channels can expand the diegesis beyond the two-dimensional screen.

Diegetic Sound: Dialogue, music, or sound effects that occur within the story world.

Dialogue: Shorthand for the dialogue track that includes spoken sounds on the set or stage. Dialogue also refers to printed words spoken by actors in a scene.

Dialogue Smoothing: A process by which voice or dialogue tracks are constructed with ambience or presence handles in a checkerboard pattern on separate tracks thus providing crucial overlap between elements, offering a seamless continuity of dialogue.

Digital: A process by which a sound is converted into a series of numerical measurements, establishing a digital code, which is usually a binary pattern of ones and zeros.

Dolby: A corporation, founded by Ray Dolby in 1965, best known for creating a family of noise-reduction technology. Dolby also often refers as short hand for different Dolby products, such as Dolby Stereo or Dolby Digital.

Dolby Digital: An AC–3 format of sound encoding developed to offer discrete multichannel sound signals to the theater speakers. Also used in consumer electronics and encoding of media such as DVDs.

Dolby Stereo: A cost-effective optical process that involves the utilization of two areas of sound encoding on motion picture film. The two areas are encoded and decoded using a processing matrix to create four channels of film sound signal—left, center, right, and surrounds.

Doppler Shift: The perceived rise and fall in frequency of a sound source as it passes a listener at a single point.

DTS (Digital Theater System): A discrete multichannel digital format developed by Universal and Amblin Entertainment, which premiered with the release of *Jurassic Park* (1993). Sound is encoded on CD-ROM and linked to picture with time code.

DME: Dialogue, Music, and Effects (D, M, and E).

Dubbing: See *Mixing*. Dubbing may also refer to the replacement of character voices for foreign-language releases of films.

Dynamic Range: The range between the loudest and softest sound a medium can produce.

Equalization: The reconfiguration of the sound signal to emphasize or deemphasize or remove specific qualities.

Filtering: The process by which certain frequencies or range of frequencies can be removed from the audio signal.

Flanging: Placing two identical sounds significantly out of synchronization to create mechanized or special effect.

Foley: The term given to those effects created on a sound stage in synchronization with the picture. Named after Universal Sound Effects editor Jack Foley. Previously known as *make-and-synch*.

Foley Artist: An individual who creates the detailed sounds such as footsteps and body movements in synchronization with the projected image.

Format: In terms of the soundtrack, format refers to the presentation medium in which the soundtrack is presented. For example, Dolby Digital is a 5.1 discrete digital format.

Level: Refers to the volume of a sound signal.

Library: A collection of sound effects often organized under specific categories such as explosions, body hits, and rumbles.

Localization: Determining the placement or direction of a sound in space.

Looping: See *ADR*.

Masking: A condition in which one sound may cover another and render it inaudible or unintelligible. For instance, a low frequency rumble may mask midrange frequency dialogue.

MIDI: Stands for Musical Instrument Digital Interface. It represents a system of standards for linking musical instruments and computers and sound processing devices.

Midrange: Refers to frequencies between 200 Hz and 2,000 Hz. Dialogue generally falls within this frequency range.

Mixing: The process by which the various elements of the soundtrack are blended or

re-recorded to create the overall soundtrack. This process traditionally involves three individuals, each dealing with a specific area—dialogue, music, and effects. The lead individual is often the dialogue mixer. Also *Dubbing*.

MOS: A scene shot without sound.

Nondiegetic sound: Dialogue, music, or sound effects that occur outside diegetic space. For instance, the score of the film, which remains outside the narrative world, yet participates in its construction.

Off Mike: Refers to a sound source (usually a voice) that is not within a microphone's pickup pattern.

Omni-directional Microphone: A microphone that has a wide pickup pattern to cover sounds from the entire recording area.

On Mike: Refers to a sound source that is within a microphone's pickup pattern.

Optical: A type of encoding and decoding of sound on to film using a special optical head, resulting in narrow bands at the edge of the celluloid.

Pan: The manipulation of a sound in space, usually in a lateral direction. An effect usually achieved through the use of a pan pot, but can also be a result of recording.

Perspective: Refers to recording perspective or the perceived distance between sound object and the recording device.

Pickup Pattern: A term that refers to the shape of the collection perimeters for a particular microphone. For example, a microphone can be omnidirectional, collecting in a wide, undiscriminating pattern.

Production Recordist: The individual who captures the sound during location and stage work on a film production.

Production Track: The recordings made during the production of the film. The production track generally provides the guide for postproduction sound work.

Quadraphonic: A four-channel system of sound reproduction offering immersive quality to the sound environment.

Sampling: To retrieve a portion of another sound or piece of music and integrate into a new construction.

SDDS: Sony Dynamic Digital Sound. A multichannel digital format (eight channels) developed by the Sony Corporation and implemented in theaters beginning in 1994.

Spotting: A detailed analysis of the specific sound needs for the film to create an integrated sound design, covering sound effects, Foley, ambiences, and music.

Stems: The related strands of a final mix. These strands can be categorized by type (dialogue, music, or effects) or by use (for instance, isolated stems may hold just the center speaker strands of audio). Sound stems are maintained in separated form to allow maximum flexibility in reusing the material for foreign releases or alternative versions of a film.

Stereo: A two-channel configuration of a sound.

Supervising Sound Editor: Manager who reads script or book and spots the film with the director. Supervising Sound Effects Editor will delegate responsibilities and be the liaison between the sound crew and the producers and director.

Timbre: The individual quality of a sound.

THX: Tomlinson Holman eXperiment. A system of performance standards for sound reproduction that match the standards established during the original mixing process. Developed by Tomlinson Holman for Lucasfilm.

Time Code: The electronic equivalent of film sprockets. A process by which captured film images are kept in synchronization with separately recorded sound.
Track: A linear grouping of sound objects, such as dialogue, music, or effects.
Voice-over: Refers to representations of the voice that run over the image track.
Wild Line: A line of dialogue recorded and placed with no visible synchronization to the character.
Wireless microphone: A small microphone or body microphone with separate power source and without physical connection to the recording device. This type of microphone often limits sound perspective.

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Filmography

The 400 Blows (1959)
12 Monkeys (1995)
2001: A Space Odyssey (1968)
The Adventures of Robin Hood (1938)
The Alamo (1960)
Alien (1979)
Alien (2004) Director's Cut
Alien^3 (1992)
Alien: Resurrection (1997)
Aliens (1986)
Alien vs. Predator (2004)
Alphaville (1965)
Altered States (1980)
American Graffiti (1973)
An American Werewolf in London (1981)
The Animatrix (2003)
Apocalypse Now (1979)
Armageddon (1998)
Around the World in 80 Days (1956)
Back to the Future (1985)
Back to the Future Part II (1989)
Back to the Future Part III (1990)
Batman Returns (1992)
Ben-Hur (1959)
The Birds (1963)
Blackmail (1929)
Blade Runner (1982)
Blade Runner—The Director's Cut (1992)
The Blob (1958)
Blowup (1966)
Bonnie and Clyde (1968)
Brazil (1985)
Breathless (1960)
Brother From Another Planet (1984)
Bullitt (1968)
Carousel (1956)
Carrie (1976)
The City of Lost Children (1995)
Citizen Kane (1941)
Cleopatra (1963)
A Clockwork Orange (1971)
Close Encounters of the Third Kind (1977)
Cool Hand Luke (1967)
Critters (1986)
The Conversation (1974)
Dark City (1997)
Dark Star (1973)
The Day the Earth Stood Still (1951)
Days of Heaven (1978)
D.O.A. (1950)
Double Indemnity (1944)
Dune (1984)
Easy Rider (1969)
The English Patient (1996)
E.T. The Extra-Terrestrial (1982)
The Exorcist (1973)
Fahrenheit 451 (1966)
Fantastic Voyage (1966)
The Fifth Element (1997)
The Fly (1986)
Gattaca (1997)
George Lucas in Love (1999)

The Ghost of Frankenstein (1942)
The Ghost in the Shell (1996)
Gimme Shelter (1971)
The Godfather (1972)
The Godfather: Part II (1974)
The Godfather: Part III (1990)
The Graduate (1967)
Halloween (1978)
A Hard Day's Night (1964)
Hardware Wars (1997)
Harry Potter and the Sorcerer's Stone (2001)
Harry Potter and the Chamber of Secrets (2002)
Harry Potter and the Prisoner of Azkaban (2004)
Harry Potter and the Goblet of Fire (2005)
The Haunting (1963)
The Hidden (1987)
Hiroshima mon amour (1959)
Independence Day (1996)
Indiana Jones and the Last Crusade (1989)
Indiana Jones and the Temple of Doom (1984)
Invasion of the Body Snatchers (1956)
Invasion of the Body Snatchers (1978)
It! Terror from Beyond Space (1958)
Jaws (1975)
Johnny Mnemonic (1995)
Jules and Jim (1962)
Jurassic Park (1993)
King Kong (1933)
La Jetée (1961)
The Last Starfighter (1984)
Last Year at Marienbad (1961)
Lawrence of Arabia (1962)
Leviathan (1989)
Lifeforce (1985)
Logan's Run (1976)
Lord of the Rings: The Fellowship of the Ring (2001)
Lord of the Rings: The Two Towers (2002)
Lord of the Rings: The Return of the King (2003)
M (1930)
Mad Love (1935)
Mad Max (1979)
Mad Max 2 (AKA *The Road Warrior*)(1981)
Mad Max Beyond Thunderdome (1985)
Mars Attacks! (1996)
The Matrix (1999)
The Matrix Reloaded (2003)
The Matrix Revolutions (2003)
Men in Black (1997)
Metropolis (1927)
Mimic (1997)
Minority Report (2002)
Monterey Pop (1968)
Mutiny on the Bounty (1935)
The Navigator: A Medieval Odyssey (1988)
Nashville (1975)
New York, New York (1977)
Night of the Living Dead (1968)
North by Northwest (1959)
Notorious (1946)
Oklahoma! (1955)
Planet of the Apes (1968)
Poltergeist (1982)
Predator (1987)
Psycho (1960)
Raiders of the Lost Ark (1981)
Rain (1932)
Rear Window (1954)
The Right Stuff (1983)
Robin Hood—Prince of Thieves (1991)
RoboCop (1987)
Rosemary's Baby (1968)
Scanners (1980)
Shoot the Piano Player (1960)
Silent Running (1972)
Smuggler's Island (1951)
Solaris (1972)
South Pacific (1958)
Soylent Green (1973)
Spartacus (1960)
Species (1995)
Star Trek: The Motion Picture (1979)
Star Wars: Episode I—The Phantom Menace (1999)
Star Wars: Episode II—Attack of the Clones (2002)

Star Wars: Episode III—Revenge of the Sith (2005)
Star Wars: Episode IV—A New Hope (1977, 2004)
Star Wars: Episode V—The Empire Strikes Back (1980, 2004)
Star Wars: Episode VI—Return of the Jedi (1983, 2004)
Stargate (1994)
Starship Troopers (1997)
Strange Days (1995)
Superman (1978)
Taxi Driver (1976)
The Terminator (1984)
Terminator 2: Judgment Day (1991)
Terminator 3: Rise of the Machines (2003)
The Thing (also, *The Thing (From Another World)*) (1951)
The Thing (1982)
Them! (1954)
Things to Come (1936)
THX 1138 (1971)
THX 1138 (2004), The Director's Cut
Top Gun (1986)
Total Recall (1990)
Toy Story (1995)
Tron (1982)
Wargames (1983)
War of the Worlds (2005)
Waterworld (1995)
West Side Story (1961)
Westworld (1973)
Wolf (1994)
The Wolfman (1941)
Woodstock (1970)
X-Men (2000)
The X Files—Fight the Future (1998)

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Index

Abbey Road, 35
Academy Awards, 26, 224
Academy of Motion Pictures, Arts and Sciences, 25–26
Adventures of Robin Hood, The (1938), 112
Alamo, The (1960), 119
Alien (1979), 6, 12, 30, 123, 129–130, 143, 145, 147–165
Aliens (1986), 42, 147
Alien^3 (1992), 147
Alien: Resurrection (1997), 147
Alien vs. Predator (2004), 147
Alphaville (1965), 11, 33, 56, 61, 64–67, 77
Altered States (1980), 139
Altman, Rick, 8, 96, 132–133, 203
Altman, Robert (director), 30, 58
ambience: placement, 122; wind, 126, 130, 136–139, 153–154, 208–210
American Graffiti (1973), 20, 32, 36, 58
American Werewolf in London, An (1981), 141
American Zoetrope, 30, 55, 71
Andrew, Dudley, 60
Animatrix, The (2003), 7, 224, 230, 235
anthropomorphism, 6, 12, 50, 94, 109–110, 130, 143–145, 150–152, 154–159, 164, 200–202
Antonioni, Michelangelo (director), 58–59
Apocalypse Now (1979), 2, 18, 21–24, 76, 174
Apollo missions, 79–80
armaments, 23, 201, 203–204, 209, 218–219. *See also* gunfire
Around the World in 80 Days (1956), 119
audio commentary, 7, 224, 229–234
auteur theory, 60
Automated Dialogue Replacement (ADR), 69, 77, 160, 175–176, 197–198
avant-garde music, 11, 37, 39, 45, 94
Avnet, Jon (director), 226

backgrounds. *See* ambience
Back to the Future (1985), 43, 63
Baker, Rick (makeup artist), 141
Balázs, Béla, 96
Barr, Marleen, 183
Batman Returns (1992), 116
Baudry, Jean-Louis, 96, 122
Bazin, André, 60, 96
Beach, Scott (radio personality), 79
Beach Boys, The, 36
Beatles, The, 35–36
Bell Laboratories, 52
Belton, John, 9, 97, 106, 118, 140, 174, 198, 229
Ben-Hur (1959), 119
Benjamin, Richard (actor), 137, 141–142
Bergman, Ingmar (director), 58
"Big Brother," 78
Birds, The (1963), 133
Blackmail (1929), 130

Blade Runner (1982), 6, 8, 12, 64, 163, 165, 169–188, 195, 238
Blade Runner: The Director's Cut (1992), 6, 12, 169–188
Blob, The (1958), 129
blockbuster, 3, 18, 25–26, 30, 93–94, 99, 108–109, 111–113, 170, 179, 195, 202, 213–214, 216, 230
Blowup (1966), 59
Boen, Earl (actor), 211
Bogart, Humphrey (actor), 60
Bonnie and Clyde (1968), 18, 57–58
Borders, Gloria S. (sound supervisor), 198
Bordwell, David, 42, 131
Brando, Marlon (actor), 22
Brave New World (novel), 75
Brolin, James (actor), 137
Brynner, Yul (actor), 137
Buck Rogers (film character), 76, 94
Bukatman, Scott, 5, 79, 187–188
Bullitt (1968), 83
Burton, Tim (director), 100
Burtt, Ben (sound designer, editor, and director), 2, 9, 11, 24, 93, 99, 101, 104, 106–113
Butch Cassidy and the Sundance Kid (1969), 42

Cahiers du cinéma, 60
Cameron, James (writer, producer and director), 138
Carousel (1956), 119
Carpenter, John (writer, producer, and director), 7, 52, 134, 138
Carrie (1976), 133
Cassidy, Joanne (actor), 183
CD. *See* compact disc
CD-ROM, 99, 235
censorship, 219
Chandler, Raymond (author), 172
Chion, Michel, 96
cinema of sensations, 39
CinemaScope, 28
cinema verité, 31
Citizen Kane (1941), 33, 42, 71
Clarke, Arthur C. (author), 17, 39, 45, 49, 120
Cleopatra (1963), 119
Clockwork Orange, A (1971), 42
Close Encounters of the Third Kind (1977), 30, 42, 52, 118, 122, 125, 155
Colley, Don Pedro (actor), 87
Columbia Studios, 113
compact disc (CD), 34–35, 99, 216, 230
computer-generated imagery (CGI), 7, 193, 205
computers, 65–66, 133; beeps, 65, 77, 110; noise, 99, 130, 156–157, 232
Constantine, Eddy (actor), 65
Consumer Electronics Association (CEA), 226
Consumer Electronics Manufacturers Association (CEMA), 227
Conversation, The (1974), 2, 18, 20–22, 58, 66, 76
Cool Hand Luke (1967), 83
Coppola, Francis Ford (writer, producer, director), 6, 20–21, 32–33, 55–56, 58, 71–72, 123
Creed, Barbara, 152, 155
Crichton, Michael (writer, producer, director), 137
cue sheet, 149, 158
cyberpunk, 74, 224, 231
cyborg, 5, 142, 214, 217, 219

Dark Star (1973), 52
Davis, Dane (sound designer), 9, 227, 232, 236, 239
Days of Heaven (1978), 174
Day the Earth Stood Still, The (1951), 42, 100
Deenam, Charles (sound designer), 236, 238–239
Delany, Samuel, 5
DePalma, Brian (director), 30
dialect, 105
dialogue: alien, 104–107, android, 110–111; placement, 119, 122, 125, 137, 176; scream, 109, 126, 129, 132, 138, 143, 157–158, 161, 164, 202, 208, 211; smoothing, 176–177, 197–198, 238; whispers, 63
dialogue replacement. *See* Automated Dialogue Replacement (ADR)

Dick, Philip K. (author), 169
diegetic sound, 63, 161, 210, 212
digital: audio workstation, 1, 70, 112, 195, 197, 205; exhibition, 31, 115, 223–240; recorder, 205; recording, 69
Digital Domain (corporation), 195
disaster films, 137–138, 208–210
Disney, Walt (producer), 43
Disney Studios, 42
D.O.A. (1950), 171
Do Androids Dream of Electric Sheep? (novel), 169
Doane, Mary Anne, 8, 96, 118, 194–195, 197, 211, 236
Dolby, Ray, 117–118, 120
Dolby: Dolby Decoder, 22; Dolby Digital, 1, 116–117, 191, 193, 205, 225–226, 238; Dolby Labs, 117–118; Dolby Noise Reduction, 7, 30, 69, 115, 118–119; Dolby Pro-Logic, 116; Dolby Stereo, 1, 3, 12, 28, 95, 113–126, 199, 205, 225; Dolby Surround, 116–117, 225
Doppler shift, 72
Doty, William G., 236
Double Indemnity (1944), 171
Dullea, Keir (actor), 50
Duvall, Robert (actor), 57, 75
DVD, 3, 7, 13, 34, 99, 170, 188, 216, 223–240
dynamic range, 1, 104, 191
Dynamic Theater Sound (DTS), 116–117, 191, 205, 238
dystopia, 5, 85, 94, 153, 209

Easy Rider (1969), 37, 42
Electronic Labyrinth THX 1138:4EB (1967), 33, 55, 59
English Patient, The (1996), 20
Enter the Matrix, 13, 224, 235–240
Eurrium, Art (sound designer for games), 237
event cinema, 93, 120
"Exit Sign" effect, 196
Exorcist, The (1973), 30, 58, 133–137

Fahrenheit 451 (1966), 11, 42, 56, 59, 61, 67–68, 77
fantastic, the, 98–99, 136, 164, 200
fantasy, 107, 122, 129
Federal Communications Commission (FCC), 35
Fellini, Federico (director), 58
Fiedel, Brad (composer), 215
Firm, The (1993), 176
Fishburne, Laurence (actor), 227
flanging, 66
Flynn, Errol (actor), 112
FM. *See* radio
Foley, Jack (sound innovator), 140
Foley: artist, 140, 159; production process, 139–142, 147, 150, 159–161, 207; stage, 159; walking, 111, 139–142, 145, 164, 200, 219–220
Ford, Harrison (actor), 171–172, 174, 178
Ford, John (director), 60
Forrest, Frederic (actor), 20
400 Blows, The (1959), 59
Frankenstein (novel), 182
French New Wave, 11, 56, 59–69, 74, 77–78, 90, 93
frequency patterns, 87, 98, 176, 195
Friedkin, William (writer, producer, director), 6, 30, 58, 133–134
Furlong, Edward (actor), 198

Gaeta, John (visual effects supervisor), 231
genetics, 139, 163, 180
genre: conventions, 98, 100, 104, 107, 112–113, 132, 148, 150, 153; cycles, 129, 133; exchanges, 108, 129–165; expectations, 99, 104, 112–114, 121, 148, 161, 214; experimentation, 68, 93; hybrids, 12, 129–165
geography: spatial, 102–103, 111, 115–126, 130, 140, 150, 152–153, 175
George Lucas in Love (1999), 111
Gestalt theory, 197
Ghost of Frankenstein (1942), 130
Gibson, William (author), 224
Giger, H.R. (artist), 150–152, 157
Gilliam, Terry (writer, producer, director), 63
Gimme Shelter (1971), 37
Godard, Jean-Luc (writer, producer, director), 11, 33, 58–60, 64–68, 76–77

Godfather, The (1972), 33, 76
Goldsmith, Jerry (composer), 42, 155
Goldwyn Studios, 25, 30
Graduate, The (1967), 36, 42, 57
Greenberg, Harvey, 157–161
Grieg, Edvard (composer), 130
Griffith, D. W. (producer, director), 39
Guinness, Alec (actor), 111
gunfire, 2, 23, 112, 184, 203–204, 218–219, 236, 238
Gunning, Tom, 123
Guns N' Roses, 216

Hackman, Gene (actor), 20, 22
Haeny, John (sound editor), 176
Halloween (1978), 133–134, 144, 153
Hamilton, Linda (actor), 193, 197
Hansen, Miriam, 230
Haraway, Donna, 9, 142, 218
Hard Day's Night (1964), 36
Hardware Wars (1997), 99
Harry Potter film series, 7
Hauer, Rutger (actor), 181
Haunting, The (1963), 133
Hawks, Howard (producer, director), 41, 60, 132
Heart of Darkness, 21
Herrmann, Bernard (composer), 41–42
Hi-Fi, 34, 225
high-definition (HD), 188
Hiroshima, mon amour (1959), 59
Hitchcock, Alfred (producer, director), 29, 60, 70, 130, 133, 140
Holm, Ian (actor), 160
Holman, Tomlinson (inventor and professor), 9, 26, 96, 196
home theater, 1, 13, 225–234
Hong Kong action films, 228, 232
Horner, James (composer), 42
horror: conventions, 129–165, 216; hybrids, 12, 129–165; iconography, 132; music, 130–139
house style, 101, 112, 124
Hurt, John (actor), 161
Hurt, William (actor), 139
Huxley, Aldous (author), 75
hyperreal, 122, 200–201, 228

image-sound relations, 3, 11, 67, 106, 111, 113, 134, 141, 176, 178, 186, 191, 199, 211
Indiana Jones and the Last Crusade (1989), 24
Indiana Jones and the Temple of Doom (1984), 24
Industrial Light and Magic (ILM), 195
Invasion of the Body Snatchers (1956), 129, 132
It! Terror from Beyond Space (1958), 129

James, Brion (actor), 179
Jameson, Fredric, 209
Jaws (1975), 93, 133–134, 136, 144
Johnny Mnemonic (1995), 116
Johnson, Tom (dialogue mixer), 197–199
Jones, James Earl (actor), 111
Jules and Jim (1962), 59
Jurassic Park (1993), 26, 116

Kaminsky, Stuart M., 215
Karina, Anna (actor), 65
Kerman, Judith B., 169
Kerner, Marvin M., 147–148
Khatchaturian, Aram (composer), 51
King, Geoff, 94, 193
King Kong (1933), 71
Korngold, Erich Wolfgang (composer), 41, 155
Kotto, Yaphet (actor), 160
Kubrick, Stanley (writer, producer, director), 7, 11, 17–18, 23, 42–48, 50, 52, 120
Kudelski, Stefan (inventor), 31
Kuhn, Annette, 162–163
Kurosawa, Akira (writer, producer, director), 58
Kurtz, Gary (producer), 32

La Jetée (1961), 11, 56, 59, 61–64, 86
Landis, John (director), 141
Lang, Fritz (director), 130
Lastra, James, 8, 96
Last Year at Marienbad (1961), 59
Laura (1944), 171
Lawrence, Amy, 8, 148
Lawrence of Arabia (1962), 119

Lester, Richard (director), 36
library. *See under* sound
Ligeti, György (composer), 45, 48–51
LoBrutto, Vincent, 9
long-playing record (LP), 6, 34
looping. *See* Automated Dialogue Replacement (ADR)
Lord of the Rings, The film series, 7, 193
Lorre, Peter (actor), 130
Lovecraft, H.P. (author), 136, 216
Lucas, George (writer, producer, director), 6, 11, 20, 32–33, 36, 52, 55, 58–59, 68, 72, 75, 81, 90, 93, 101, 104, 107, 110–111, 123, 129
Lucasfilm, 29

M (1930), 130
Marker, Chris (director), 11, 59, 62
Mars Attacks! (1996), 100
Martin, George (music producer), 35
Maté, Rudolf (director), 171
Matrix, The (1999), 6–7, 10, 13, 35, 65, 223–240
Matrix Reloaded, The (2003), 230, 234–235
Matrix Revolutions, The (2003), 108, 230, 235
Matrix Online, The, 13, 235
Matrix: Path of Neo, The, 13, 235
Mayhew, Peter (actor), 105
McCarthy hearings, 84
McDowell, Malcolm (actor), 42
McGovern, Terry (radio personality), 79
McOmie, Maggie (actor), 57, 75
McTiernan, John (director), 144
Metro-Goldwyn-Mayer (MGM), 44
Metropolis (1927), 206
Metz, Christian, 94, 114
microphone: directional, 150; off mike, 84–85, 97; omnidirectional, 150; on mike, 84–85, 97; perspective, 63, 82, 101–104, 149–150, 157, 174, 203; pickup pattern, 84, 97, 104; placement, 97, 158, 164, 174, 176
mimicry, 211–214
MOI (with out image), 106
montage. *See* sound montage
Monterey Pop (1968), 37
Morton, Joe (actor), 203
MOS (with out sound), 106
Moss, Carrie-Anne (actor), 231
Motown, 35
Movie Brats, The, 6–7, 30, 33, 59
MP3 format, 239
multichannel, 1–3, 18, 22, 95, 108, 113–126, 188, 195, 199–200, 202, 225–240. *See also* Dolby
multimedia, 123
multi-track: recorder, 32; recording, 32, 69, 72
Murch, Walter (sound designer, editor, writer, director), 2, 9, 11, 20–24, 26, 32–33, 36, 55, 58–59, 65, 68, 70, 72, 74–75, 94, 98, 100, 103, 120, 200
music: counterpoint, 111; leitmotif, 40–41, 215, 220; motif, 81; orchestration, 42, 131, 155, 187; score, 11, 39–52, 83–84, 90, 120, 130–139, 154–157, 164, 186–188, 214–216, 220, 239; source, 11, 23, 41, 216, 239; underscoring, 215. *See also* avant-garde music
musical compositions in films: *Also Sprach Zarathustra*, 17, 46, 52; *Atmospheres*, 50; "Bad to the Bone," 217; "Bicycle Built for Two," 51; *Blue Danube, The*, 23, 37, 45, 50–51; *Gayne Ballet Suite*, 51; "Good Vibrations," 36; "Guitars, Cadillacs," 216; *Lux Aeterna*, 51; *Peer Gynt*, 130; "Power of Love, The," 43; *Requiem for Soprano, Mezzo-Soprano, Two Mixed Choirs, and Orchestra*, 37, 45, 48; "Ride of the Valkyries," 23; "Singin' in the Rain," 42; "When You Wish Upon a Star," 42; "You Could Be Mine," 216
musique concrete, 57, 76, 133
Mutiny on the Bounty (1935), 119

Nagra, 18, 31–32, 34, 72, 74, 93, 101, 110
narration. *See* voice: voice-over
Nashville (1975), 18, 30, 58
National Aeronautics and Space Administration (NASA), 79–80, 86
Naughton, David (actor), 141

New Hollywood, 6–7, 11, 59, 68–70, 93–94, 112–115, 118, 121
new media, 1, 229–240
New York, New York (1977), 33
New York University (NYU), 32
Nichols, Mike (writer, producer, director), 36
Nietzsche, Frederic, 47
Night of the Living Dead (1968), 133
1984 (novel), 75
Nintendo, 223
nondiegetic sound, 23
North, Alex (composer), 44
North by Northwest (1959), 29
Notorious (1946), 148

Oklahoma! (1955), 119
Olalquiaga, Celeste, 183
Olmos, Edward James (actor), 177
opera, 41, 237
optical medium, 117
orchestration. *See* music
Orwell, George (author), 75, 78, 83
out of synchronization, 176

package unit, 29
Paramount Case, 27–28
Paramount Studios, 29, 113, 140
Patrick, Robert (actor), 211
Penley, Constance, 219
Penn, Arthur (director), 58
Peoples, David (writer), 170
Pet Sounds (musical recording), 36
Planet of the Apes (1968), 63
PlayStation, 223
Pleasance, Donald (actor), 78
Poltergeist (1982), 155
Predator (1987), 144–145, 159
Preminger, Otto (director), 171
producer unit, 29
Psycho (1960), 57, 133
psychoacoustics, 9
Pyle, Forest, 183

radio: AM-FM Radio, 34–35, 102, 113; noise, 122, 156–157, 187; serials, 140, 174; Top-40 Format, 35, 37, 43
Radio-Keith-Orpheum (RKO), 71
Raiders of the Lost Ark (1981), 24, 76
Rain (1932), 148
realism, 60, 75, 95–97, 106, 118–120, 132, 143, 147–150, 152, 164, 199
Rear Window (1954), 140
Reeves, Keanu (actor), 227
Renais, Alain (director), 59
Revolver, 35
"Road Show" exhibition, 22
Robin Hood: Prince of Thieves (1991), 113
RoboCop (1987), 124
"rock and roll" transport re-recording system, 72
Rosemary's Baby (1968), 133
Russell, Ken (director), 139
Russell, Kurt (actor), 143
Rydstrom, Gary (sound designer, director), 4, 9, 26, 197, 199, 201–202, 214, 218, 231

Salter, Hans J. (composer), 130–132, 134
Sammon, Paul M., 169
San Francisco, 32, 55, 66, 71–72, 75, 79
Sarkar, Bhashkar, 136, 145
Scent of a Woman (1992), 176
Schatz, Thomas, 29, 213
Schifrin, Lalo (composer), 83
Schwarzenegger, Arnold (actor), 144, 201, 203, 213–214, 216
science fiction: hybrids, 12, 129–165; iconography, 95, 107, 113; music, 36, 39–52, 83–84, 100. *See also* genre
score. *See* music
Scorsese, Martin (writer, producer, director), 6, 30, 33, 58
Scott, Ridley (writer, producer, director), 12, 64, 129, 163, 165, 169, 171–172, 188
scream. *See under* dialogue
Sergi, Gianluca, 193–194
sexuality: in science fiction, 83–84, 139
Sgt. Pepper's Lonely Hearts Club Band, 35
Sheen, Martin (actor), 21
Shelly, Mary (writer), 182
Shoot the Piano Player (1960), 59
sicons (sonic icons), 233–234

silence, 134, 195, 201
Silverman, Kaja, 161, 171, 178, 210
Skerritt, Tom (actor), 158
Sky Captain and the World of Tomorrow (2004), 226
Skywalker Ranch. *See* Skywalker Sound
Skywalker Sound, 29, 30, 199, 218
slasher film, 144
Smith, Jada Pinkett (actor), 235
Smuggler's Island (1951), 140
Sobchack, Vivian, 9, 18, 43, 81, 121–123, 126, 208, 218
Sontag, Susan, 138
Sony Dynamic Digital Sound (SDDS), 116, 191, 205, 238
sound: capture, 4, 12, 93–114, 147–150; construction, 4, 93–114, 135, 147–150, 184, 218–219; fields, 116; library, 101, 112, 132; localization, 116; montage, 1, 11, 19, 55, 57–58, 61, 66, 68–69, 72, 75–90, 93, 133–134; perspective, 61, 95, 101–104, 153, 193, 196; sets, 71, 101, 124; sound-on-disc, 116; spectacle, 3, 107–108, 119, 121, 134, 155, 202, 234, 236; stems, 199; supervisor, 25, 69–70; unions, 25, 70
source music. *See* music: source
South Pacific (1958), 119
Spaceballs (1987), 99, 111
space race, 79, 121
Spartacus (1960), 44, 119
special effects, 18, 45, 50, 93, 97–98, 100, 114–115, 123, 125, 141, 193. *See also* computer-generated imagery (CGI)
spectacle, 12, 18, 23, 40, 83, 93–95, 107–108, 114, 123, 131–132, 141–142, 145, 154, 160–161, 169–170, 186–188, 191–194, 196, 198–202, 213–214, 236
Spector, Phil (music producer), 35
speech, 65, 81, 105
Spielberg, Steven (writer, producer, director), 6, 11, 30, 43, 52, 123, 134
spotting, 107, 207
Sputnik launch, 79
Staenberg, Zach (film editor), 231
Stagehands Union, 32, 55
Staiger, Janet, 131
Star Trek: The Motion Picture (1979), 42, 108, 155
Star Wars: Episode I—The Phantom Menace (1999), 99
Star Wars: Episode III—Revenge of the Sith (2005), 108
Star Wars: Episode IV—A New Hope (1977, 2004), 2, 6, 11, 24–25, 28, 30–33, 42, 67, 72, 76, 81, 90, 93–114, 116–126, 143, 147, 155
Star Wars: Episode V—The Empire Strikes Back (1980, 2004), 24, 113
Star Wars: Episode VI—Return of the Jedi (1983, 2004), 24, 111, 113
Steiner, Max (composer), 41, 155
stereo. *See* Dolby: Dolby Stereo
Steward, James G. (sound supervisor), 71
Strange Days (1995), 116
Strauss, Johann (composer), 45, 50
Strauss, Richard (composer), 17, 46–47
subjectivity, 12–13, 17, 21, 49, 63, 108, 130, 135, 139, 170, 173, 178–179, 202–204, 224, 229
Summers, Gary (music mixer), 199
Sun, Rosanne (game producer), 237
Superman (1978), 116–118, 229
supernatural, 138, 143–145
surround sound. *See* Dolby: Dolby Surround
Sylvester, William (actor), 49
synchronization, 174–176, 192, 231, 238. *See also* out of synchronization
Synclavier system, 208

Taxi Driver (1976), 33
television (TV), 58, 113, 223–234
Terminal Identity, 5, 79, 187
Terminator, The (1984), 63, 67, 138, 142, 211, 214, 219
Terminator 2: Judgment Day (1991), 2, 4, 6, 13, 26, 192–220, 231
Terminator 3: Rise of the Machines (2003), 210
Theater Alignment Program (TAP), 29
Them! (1954), 132, 229
theremin, 36, 100
Thing, The (1951), 42, 129, 132

Thing, The (1982), 30, 138, 143–144
Thing (From Another World), The. See *Thing, The* (1951)
Thompson, Kristin, 131
Thorogood, George (musician), 217
THX 1138 (1971), 2, 6, 11, 18–20, 33, 55–57, 59, 63–90, 94, 100, 109, 120, 124, 133, 229, 231
THX Sound Systems, 3, 26, 29, 191
Tiomkin, Dmitri (composer), 41
Todd-AO, 30
Todorov, Tzvetan, 9, 98, 132
Top Gun (1986), 196
Toy Story (1995), 26
Tragedy on Saturn (1939), 76
Truffaut, François (writer, producer, director), 11, 58–60
Trumbull, Douglas (special effects creator), 50
Turkel, Joe (actor), 181
Twelve Monkeys (1995), 63, 119
20th Century Fox, 28, 113
2001: A Space Odyssey (1968), 6–7, 10–11, 17–20, 23, 27, 39–52, 57, 61, 65, 67, 76, 81, 83, 107, 116, 120–121, 123, 125, 133, 139, 160–161, 188, 214, 217

underscoring. *See under* music
United Artists, 29
United States vs. Paramount, Inc., et al. *See* Paramount Case
Universal Studio, 25, 29, 116, 130–132, 134
University of California, Los Angeles (UCLA), 32
University of Southern California (USC), 26, 32, 113
utopia, 5, 126, 187, 207, 209

Vangelis (composer), 173, 186–187
Varney, Bill (sound supervisor), 25
video games, 3–4, 13, 27, 35, 123, 223, 231, 235–240
visual culture, 1
voice, 13, 109, 111, 119, 126, 140, 148, 153, 161–163, 169–188, 192, 210–214, 237–238; voice-off, 236; voice-over, 12, 61–63, 66, 86, 169–188, 210–215
Von Sydow, Max (actor), 134

Wagner, Richard (composer), 23, 35, 40, 236–237
wall of sound, 35
Walsh, M. Emmet (actor), 177
Warner Bros. Studio, 28–29, 59, 112–113, 116, 169–170, 229–230
Watergate, 58
Weaver, Sigourney (actor), 154
Wells, Orson (writer, producer, director), 33, 70
West Side Story (1961), 119
Westworld (1973), 63, 137, 141–142, 229
Weta Digital, 195
Wilder, Billy (director), 171
wild line, 197
Williams, Alan, 96, 148–150
Williams, Cindy (actor), 20
Williams, John (composer), 42
Williams, Linda, 9, 139
Wolfman (1941), 130
Wolfman Jack (radio personality), 36
Wong, Anthony (actor), 235
Woodstock (1970), 37
worldizing, 74, 78

Xbox, 223

Yoakam, Dwight (musician), 216
Young, Sean (actor), 171
youth culture, 34, 216